Consulting Engineer

November 1958

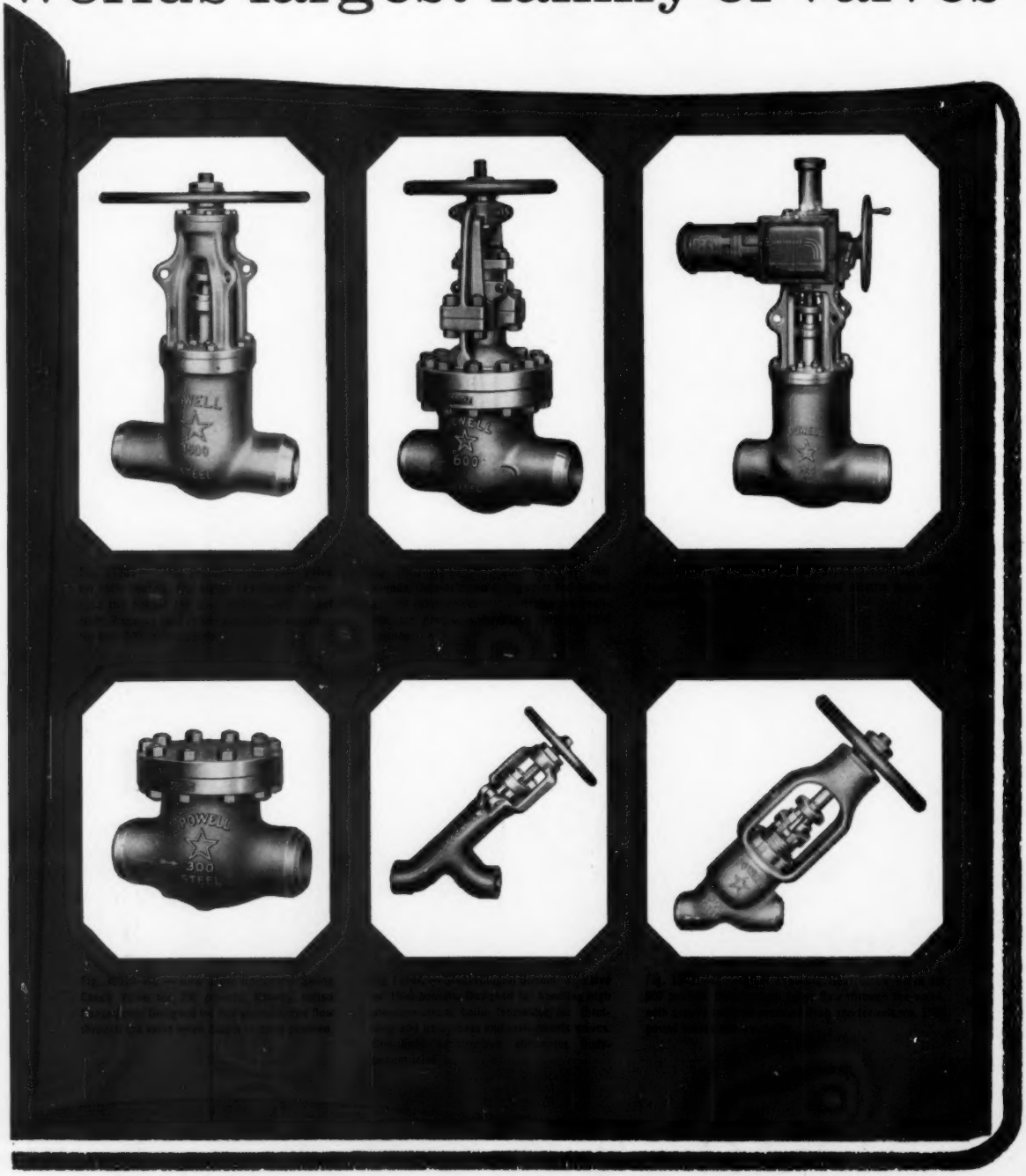
Photo by Fabian Bachrach

J. W. WOOMER, president-elect of the Society of Mining Engineers; American Institute of Mining, Metallurgical, and Petroleum Engineers Inc.; and owner of J. W. Woomer & Associates in Pittsburgh, contends that one more war would leave the United States with such seriously depleted natural resources that "we would certainly be an inferior power. Even now this nation is using its first class reserves at a rapid rate," he added. "It

Continued on page 10

POWELL

world's largest family of valves*



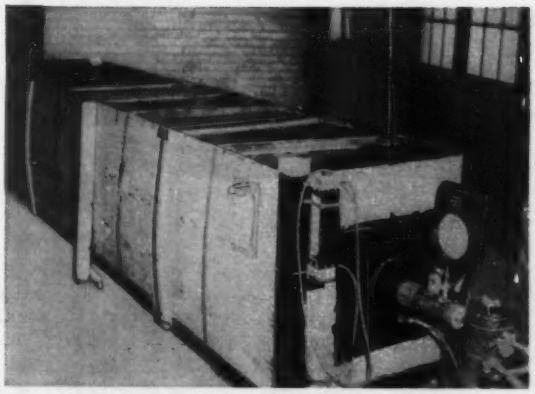
* and in this family there's a valve for every flow control requirement—for handling water, oil, gas, air, steam and corrosive fluids—available in the most required sizes and types. If your local distributor can't supply you, or if you need specially engineered valves for unusual conditions, write

THE WM. POWELL COMPANY • *Dependable Valves Since 1846* • **Cincinnati 22, Ohio**

for users of underground piping systems...

Now... for the first time, basic principles used by RIC-WIL for decades are supported by extensive independent research. These principles are brought out in Technical Reprint #16, issued as a compilation of the results of a survey by the Building Research Advisory Board, of the National Academy of Sciences and tests made by the National Bureau of Standards. These criteria are also the basis of new Guide Specifications issued by several Federal Agencies, all of which include the basic principles of RIC-WIL Prefabricated Insulated Piping Systems. This survey is of such magnitude that it required over 2,000 man-hours and some 2,500 pages of documents and tests.

All tests of a conduit system required by the survey and specifications have been completed by RIC-WIL and an approved independent testing laboratory has certified that RIC-WIL Systems comply. Write, wire or phone for complete information.



Part of test equipment built by RIC-WIL in QUALIFICATION TEST PROGRAM.

Ask for RIC-WIL *Catalog on complete line of systems available.*

Quality Piping Systems...
... of Exceptionally High Thermal Efficiency

SINCE 1910

RIC-WIL INCORPORATED — PREFABRICATED INSULATED PIPING SYSTEMS

BARBERTON, OHIO

IN CANADA: THE RIC-WIL COMPANY OF CANADA LIMITED

See our catalog in Sweet's and Engineers' Product File

Consulting Engineer ®

Wayne near Pleasant Street
Saint Joseph, Michigan

The Consulting Engineer's Professional Magazine

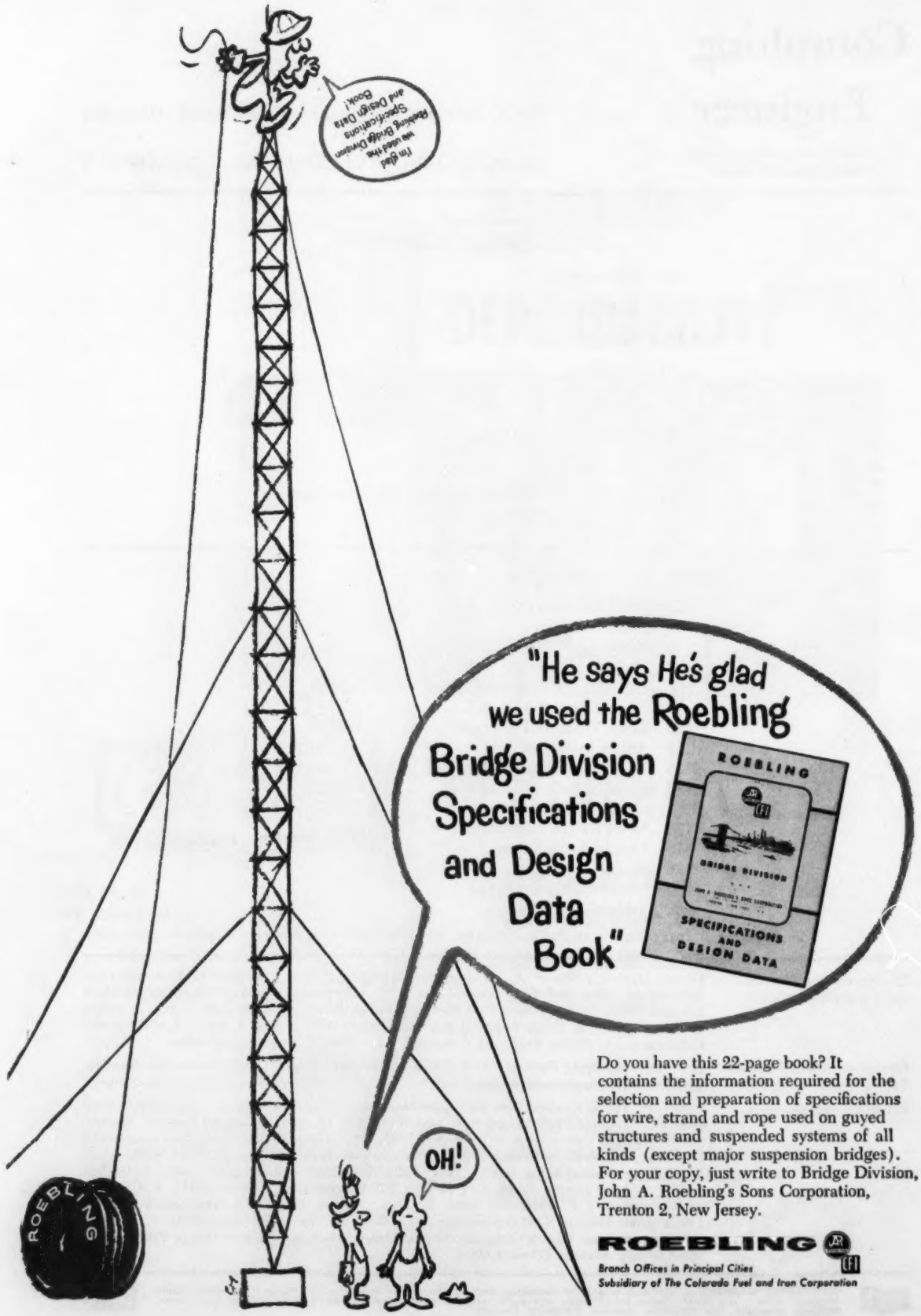
November 1958 • VOLUME XI • NUMBER V

ARTICLES

DEPARTMENTS

The Engineering Index Service in Public Libraries lists articles from Consulting Engineer

NBP CONSULTING ENGINEER is published monthly by Consulting Engineer Publishing Company at 217 Wayne Street, Saint Joseph, Michigan. Price 1 year $10.00; foreign $15.00; single copy $1.00. Accepted as Controlled Circulation Publication at Saint Joseph, Michigan. Copyright 1958 Consulting Engineer Publishing Company. BPA



Do you have this 22-page book? It contains the information required for the selection and preparation of specifications for wire, strand and rope used on guyed structures and suspended systems of all kinds (except major suspension bridges). For your copy, just write to Bridge Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

PUT FLEXITALLIC IN THE "PRINTS"

For Sealing Performance You Can Depend On

For nearly fifty years, there has been one uniquely resilient seal with a spring-action that adjusts to every change in operating conditions. It's the Flexitallic Spiral-Wound Gasket . . . identified for engineers by the blue dye in the Canadian asbestos filler.

In Flexitallic Spiral-Wound Gaskets, compression response is directly related to bolting for each application. With the desired gasket design determined, exacting mechanical controls assure that manufactured gaskets conform to specification.

Flexitallic Spiral-Wound Gaskets serve under the most rigorous operating conditions — from vacuum to 6,000 lbs., from extreme sub-zero to 2000°F. The amazing flexibility of the Flexitallic Gasket makes flanged joints leak-proof even after severe thermal shock, vibration, chemical attack, and cyclic operation.

That's why: for sealing performance you can depend on, it pays to put "Flexitallic" in the blueprints.

FLEXITALLIC GASKET CO.
8th & Bailey Sts. Camden 2, N.J.

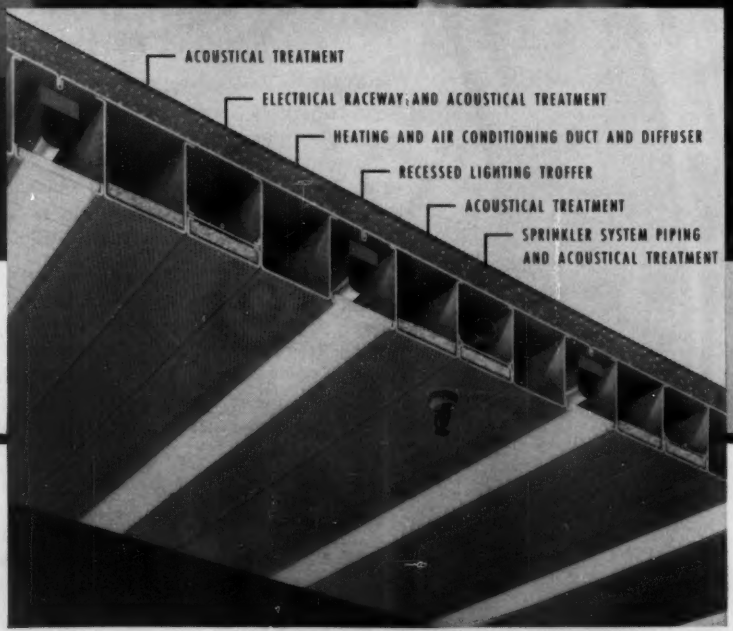
Flexitallic®
SPIRAL-WOUND GASKETS

FOR PIPE FLANGES, PRESSURE VESSELS AND PROCESS EQUIPMENT

*Flexitallic is a registered tradename. No one else can make a Flexitallic Gasket. Look for *Flexitallic Blue* — it's our exclusive blue-dyed Canadian asbestos filler.

Mahon M-FLOOR Is Utilized

Above: Interior View of Office Building for Whirlpool Corporation, Clyde, Ohio. In this building the Heating and Air Conditioning Ducts and Diffusers, Recessed Lighting, Electrical Raceways, Acoustical Treatment, and Sprinkler System Piping are all contained in the Combined Structural Floor and Ceiling constructed with modified M-Floor Sections. See Detail at Right.

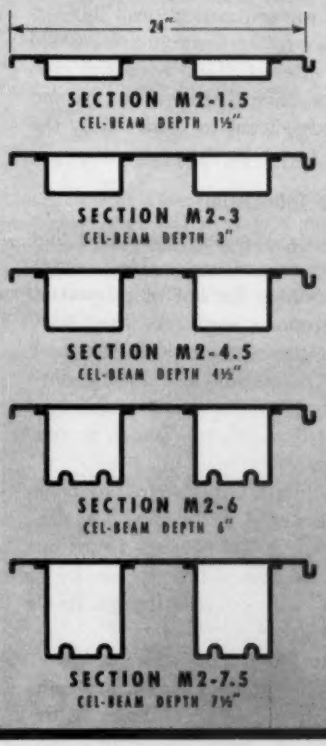


The Cross Section above shows a unique adaptation of M-Floor Construction to provide both the Structural Sub-Floor and Acoustical Ceiling. In this application, Cel-Beams and Channels between Cel-Beams in the M-Floor Sections are ingeniously utilized for several other functional purposes.

for SIX PURPOSES in Addition to Its Primary Use as a Light-Weight Structural Sub-Floor!

Modified M-Floor Cel-Beam Sections Provide: (1) Finished Ceiling Material. (2) Acoustical Treatment in Ceiling. (3) Troffers for Recessed Lighting. (4) Air Ducts and Diffusers for Heating and Air Conditioning. (5) Raceways for Electrical and Telephone Circuits. (6) Housing for Sprinkler System Piping.

MAHON M-FLOOR SECTIONS



☆ OTHER MAHON BUILDING PRODUCTS and SERVICES:

- Insulated Metal Curtain Walls
- Underwriters' Rated Metalclad Fire Walls
- Rolling Steel Doors (Standard or Underwriters' Labeled)
- Steel Roof Deck
- Long Span M-Decks (Cellular or Open Beam)
- Permanent Concrete Floor Forms
- Acoustical and Troffer Forms
- Acoustical Metal Walls and Partitions
- Acoustical Metal Ceilings
- Structural Steel—Fabrication and Erection
- Steel Plate Components—Riveted or Welded

☆ *For INFORMATION See SWEET'S FILES or Write for Catalogues*

THE R. C. MAHON COMPANY • Detroit 34, Michigan
Sales-Engineering Offices in Detroit, New York and Chicago
Representatives in all Principal Cities

MAHON

J. W. Woomer

– Starts on front cover

will be up to technological developments of the future to cope with the problem."

Woomer, who has had mining projects all over the world, warns that Red China probably has the world's greatest storehouse of minerals. Shortly after World War II, Woomer was one of a team of three experts sent to China to prepare an inventory of mineral resources. This was the first and possibly the last group of foreigners from the West to view Manchuria's vast mines. Woomer, as bituminous coal export of the trio (with James H. Pierce, Consulting Engineer, Scranton, Pa., anthracite coal; and the late Lucien Eaton, Consulting Engineer, Boston, iron and minerals authority), accompanied Chinese experts for their first visit to Manchurian mines since the Japanese occupied the area in 1931.

Manchuria's Potential "Astronomical"

"Production in Manchuria has never been great but the potential is astronomical," Woomer said. "Manchuria has the kind of resources that the United States had in the early 1800s, before the industrialization of this nation."

Woomer explained that the Chinese, with only limited rail facilities, had developed only those mines near the railroads. That way transportation facilities could be guarded and the operators would not have to venture far enough afield to tangle with the ever-present bandits. The Japanese had simply "taken care of" the bandits, then found coal sources not more than a mile further than the Chinese had explored. These mines yielded twenty times the return of the limited Chinese mines. In fact, the entire Japanese war machine had been keyed to the use of Manchukuo coal for their steel industry. With customary thoroughness, the Japanese also had explored the area and mapped potentials that the Chinese never knew about.

Atom Bomb Unnecessary?

One Japanese official told Woomer that the United States had not needed to drop the atomic bomb. "I knew Japan had lost the war more than a year before the bomb," the official explained. "I realized it when no spare parts for the Manchukuo power plants or the mines were coming through." The Japanese had to continue producing coal without repair parts, and by the end of the war, Chinese labor was operating power plant stokers manually.

After the war, the Chinese people had neither the technical ability nor the incentive to repair and operate their mines and power plants. (The Russians had dismantled whole power stations and shipped them to Siberia, then flooded the mines.) Some Chinese objected when General MacArthur ordered all Japanese out of the country. They had planned to continue having the Japanese operate the mines, possibly as slave labor.

Woomer said he has no doubt that China's vast mineral resources are being utilized today – but only with the assistance of Russian engineers. The Russians have developed the Chinese mines in order to insure a strong ally on the Pacific, and Woomer thinks the minerals are being used by Chinese industry – not shipped to Russia. (Ironically, some of these Russian engineers are children of White Russians who were forced from the Ukraine and other areas of European Russia during the Revolution and exiled to Siberia. Many escaped to China and Japan.)

Granted, many Chinese are holders of technical degrees from U.S. and British universities, but Woomer found these educated Chinese living a completely isolated life, some even having forgotten their English. He pointed out that only the wealthy Chinese had foreign educations. But because their money (prior to the Communists) could earn 60 to 70 percent interest, these educated people never needed to practice their professions and their technical knowledge went to waste. Only the poor in China needed to work.

American Consultants Influential

In these extensive travels, Woomer has found that American consulting engineers are making contributions to world technology far out of proportion to their numbers. European engineers long have been excessively conscious of their declining stock of mineral resources. They would use a mine until the last rock was extracted – often at prohibitive costs. "Their savings led to waste – which is synonymous with inefficiency," he added.

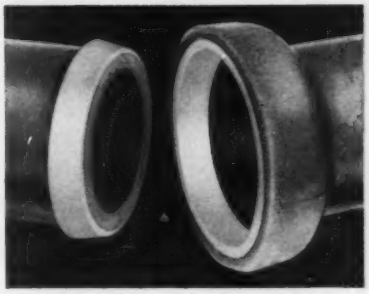
The American consultant has taught engineers of other nations to be more selective and cost conscious in their operations. If the American runs out of one basic material, he uses a little ingenuity to find a substitute – another valuable lesson he is teaching his foreign colleagues.

Woomer also has found that American machinery is a great salesman for the mining consulting engineer abroad. "American mining machinery is the best in the world, and it is logical to retain a consulting engineer that is familiar with this machinery. Conversely, American consulting engineers are famous for their technical ability. The two fit together so that the consulting engineer becomes our greatest salesman abroad."

American loans are an additional boon to the U.S. consultants, Woomer continued. Since many

over 100,000 miles of AMVIT Jointed Clay Pipe installed in FOUR YEARS

Only Factory-Made Mechanical Joint With an Outstanding Service Record In Hundreds of Vital Sewer Systems



Never before in the history of the sanitary sewer construction industry has a product gained such immediate and wide acceptance and usage in such a short period of time.

In the past few years, over 100,000 miles of Amvit® have been installed across the country with outstanding results.

Experience has shown Amvit is the engineer's choice. Here's why:—

1 QUICK INSTALLATION SAVES LABOR

Amvit Jointed Clay Pipe is delivered to the job site ready for use. Just push the pipe together and the joint is made — sure and tight. No more fussing with caulking, hot pots, joint compound.

2 FACTORY-MADE QUALITY

The Amvit Joint is manufactured from plasticized resins of polyvinyl chloride. No other combination of materials is used or needed. It is applied on the pipe at the factory and delivered ready for immediate installation.

3 ROOTPROOF

The design of the Amvit Joint is based on the ball and socket principle. The material on the spigot end is convex shape, with the bell in a concave shape. This permits easy and rapid installation. When the joint is made, it reaches maximum compression which results in a really tight line. Nothing can enter the line.

4 PREVENTS INFILTRATION

Due to the tightness of the joint, ground water cannot enter the line. Since infiltration is eliminated, the sanitary sewer does not have to carry anything other than that for which it was designed. This permits the use of smaller sized pipe in many instances and will reduce material cost.

5 BETTER FLOW, LESS MAINTENANCE

The design of the Amvit Joint assures self-centering which gives a smoother invert and better flow characteristics. Because the joint is really tight, no foreign matter such as dirt, sand, and stones can possibly enter the line.

6 COMPLETE FITTINGS

Amvit is furnished on all standard fittings, as well as pipe from 4" thru 24" diameters. It is now available for immediate delivery in Northeast and Central States.

For a new descriptive folder on how Amvit can help you cut sewer project costs, write American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

SINCE 1848

AMERICAN

American Vitrified Products Company

CLEVELAND, OHIO

®T. M. Registered

Plants Across the Nation... Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • St. Louis, Missouri • White Hall, Illinois

foreign developments are financed by American money, the country requesting the loan often rationalizes that the lending institutions would be most receptive to an American engineer's appraisal of their problems. This means more work for American engineers.

Aimed for Private Practice

Woomer, who has had his own consulting firm for 18 years, has wanted his own private practice since he was in college. He planned his career accordingly, gaining experience in all aspects of mining. Even as a sophomore in high school, he started working summers as a surveyor for a bituminous coal mine in Philipsburg, Pa. He continued these summer jobs until he was graduated from Pennsylvania State University, in 1925.

The first full-time job held by Woomer was in the Georges Creek mining field near Frostburg, Md., where he worked for six months as assistant to the superintendent. There he worked under Louis Gerdetz, an Austrian engineer, who devised a method of reclaiming coal lost since 1860 because of the antiquated methods used in "Big Vein" coal seam mining.

Returning to Pittsburgh, Woomer became assistant chief engineer at the Pittsburgh Coal Co. After a one-year indoctrination period, he moved to other mines for the firm, then went to the Hanna Coal Co. of Cleveland and served in various capacities until he was named consulting engineer for the coal-mining firm.

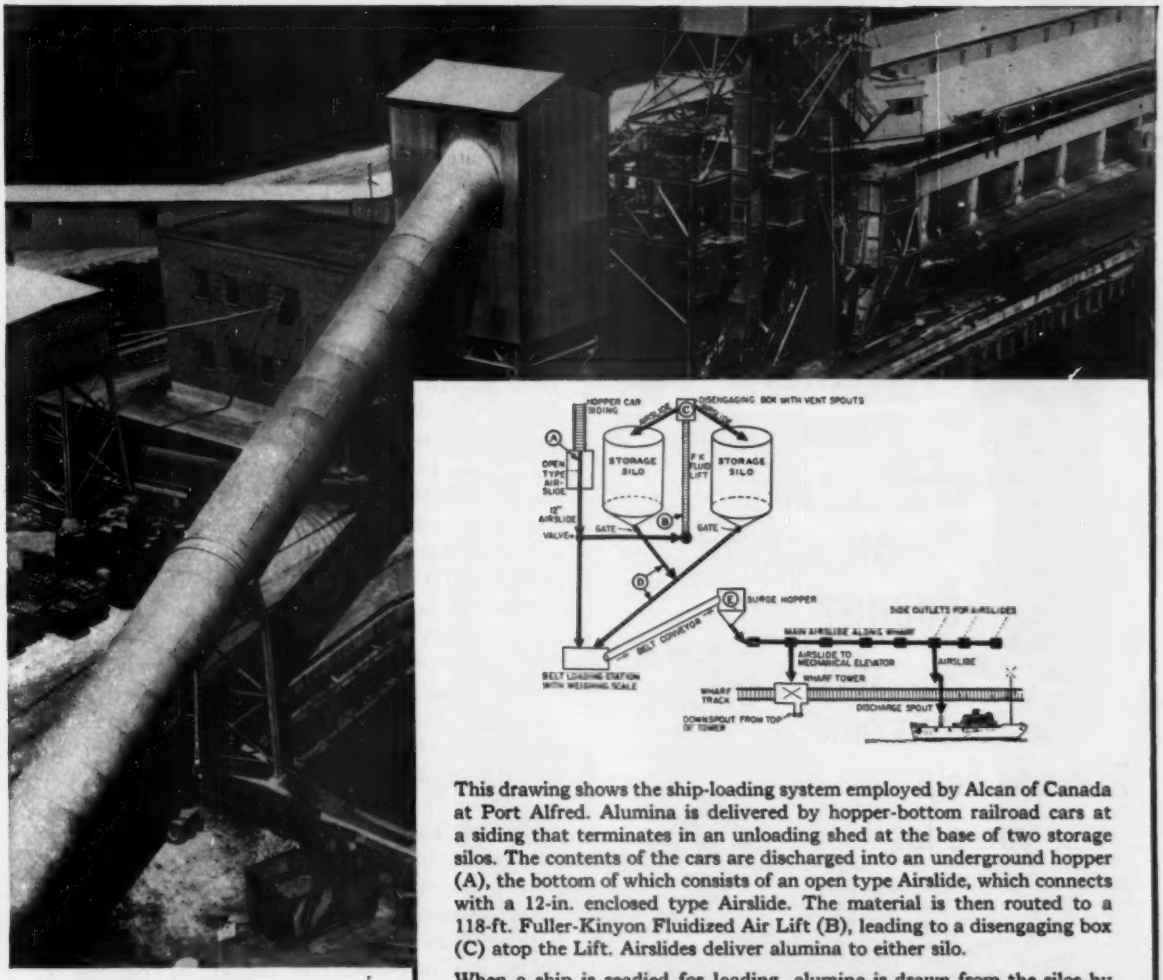
The Pittsburgh Coal Co. and the Hanna Coal Co. later merged with a third firm – Consolidation, of West Virginia – to become the largest coal company in the world. Woomer had the firm as his first client when he opened his own office and has consistently worked for them since on various projects. The company has pioneered in the introduction of new mining machinery and methods.

Knows Coal-Mining Problems

One result of his varied experience is that Woomer knows the problems of coal mining from the laborer through management levels. "I would recommend a similar career pattern for any young man wanting to become a mining engineer," Woomer added.

In addition to his carefully planned experience, Woomer also approached his jobs – from surveyor up – with a professional attitude. From graduation on, Woomer worked consistently with professional and technical organizations and devoted as much time as possible to preparing technical papers.

Working in Pennsylvania during depression days, Woomer watched the development of mining unions. He violently objects to the idea of an engineer becoming a union member. "A young man



This drawing shows the ship-loading system employed by Alcan of Canada at Port Alfred. Alumina is delivered by hopper-bottom railroad cars at a siding that terminates in an unloading shed at the base of two storage silos. The contents of the cars are discharged into an underground hopper (A), the bottom of which consists of an open type Airslide, which connects with a 12-in. enclosed type Airslide. The material is then routed to a 118-ft. Fuller-Kinyon Fluidized Air Lift (B), leading to a disengaging box (C) atop the Lift. Airslides deliver alumina to either silo.

When a ship is readied for loading, alumina is drawn from the silos by open type Airslides and transported by means of 16-inch Airslides (D) to a belt, which delivers to a surge hopper (E) feeding the 400-ft. long Airslide for conveying to the ship. Air for the operation of the Fuller-Kinyon Fluid Lift is supplied by a Fuller Rotary Compressor.

Here's how ALCAN reduces ship loading time 50%

. . . FULLER SYSTEM PAID FOR ITSELF IN WEEKS

Expansion of The Aluminum Company of Canada's pneumatic conveying system at Port Alfred, Quebec, has cut ship loading time of alumina by 50 percent.

Engineered and built by Fuller, this pneumatic conveying system has eliminated frequent interruptions in the loading schedule and made possible big savings in handling cost. The initial cost of the installation was absorbed within the first few weeks of operation!

Additional equipment consists of two 35-ft. portable F-H Airslides® operating in tandem off of a main 19-in. Airslide running a distance of 400 feet along the roof of the wharf.

These Airslides discharge the alumina directly into the hold of the ship, eliminating the time-consuming shutdown during relocation of the bucket elevator and tower for delivery to various holds.

This carefully planned system points out how Fuller's more than 30 years of specialized experience in engineering and manufacturing pneumatic materials-handling equipment helped another company save time and money. We would like to put our facilities to work for you, too. Write, giving us details of your operations.

FULLER COMPANY GENERAL AMERICAN TRANSPORTATION CORPORATION

Fuller

pioneers in harnessing AIR

G-167
4383

FULLER COMPANY

118 Bridge St., Catasauqua, Pa.

SUBSIDIARY OF GENERAL AMERICAN TRANSPORTATION CORPORATION

Birmingham • Chicago • Kansas City • Los Angeles • San Francisco • Seattle

must decide whether he is going to be an educated individualist or an employee who needs the protection of a 'mother' organization."

If engineering, as a profession, is in danger from unionism, as Woomer thinks it is, then it is the fault of large corporations working in branches of engineering that require great amounts of drafting and design work. "They are weaning the young graduates away from the professional approach by regimenting them into 9 to 5 subprofessional jobs," he explained.

But Some Unions Are All Right

Even though he objects to unions for engineers, Woomer thinks the mining industry in the United States owes its present high state of development to John L. Lewis. In 1933, Woomer was working for the Pittsburgh Coal Co., which was the firm that had broken the unions. Lewis reestablished his union that year, and later, in 1935, went on to form the CIO department of the AFofL.

From the beginning, Lewis advocated labor saving machinery, warning the mine owners, however, that his men were to be paid and paid well for operating these machines. With the increased wage demands, mine owners were forced not only to purchase machinery but to assist manufacturers in the design of this mechanized equipment. The coal mines then quickly moved ahead of other mining operations. This led to coal mining methods being adopted in, or adapted to, other mine uses, upgrading the entire profession.

This situation also proved profitable to Woomer. With his basic experience in coal mining methods during the mechanization period, he became a specialist in mining machinery and the materials handling methods now basic to metal and other mineral mining.

Overseas Works

The first foreign project of Woomer (who since has worked all over the world, including mining assignments in Alaska, Argentina, Australia, Canada, Chile, China, Colombia, France, Germany, Greece, India, Manchuria, Mexico, Turkey, and the United Kingdom) was a war-time assignment as civilian adviser to the British Ministry of Works, in 1944. He assisted the British in a crash program to open stripping projects in England.

The coal was needed desperately. Every ton of coal produced in England was precious shipping space saved. Cost was secondary.

This assignment was as much a public relations as a mining problem. English residents objected violently to the stripping of farm lands. Also, the British were accustomed to working at a slower tempo than were Americans, and the laborers were

not overly receptive to suggestions that they speed up operations and boost production.

After the war, looking over mining developments in Britain, Woomer observed the effects of nationalization of the mining industry. Government ownership has resulted in investment in modern mining equipment and the replacement of antiquated mining practices, but it also has substituted the inertia of bureaucracy. The workers, with their new job security, are not producing enough.

Argentine Professional Problems

On one project in South America, Woomer observed an unusual professional problem in Buenos Aires. In the days of Peron, Argentine engineers had a three-story building equipped with a complete technical library. Peron, who considered engineers among the dangerous "thinking class," forbade more than three engineers to congregate at one time in the building. During this period, the general public was allowed to wander through.

The post-Peron period found the Argentine engineers still with their building, but that was about all. The library had been stripped completely. The engineers currently are trying to gather enough technical books to start a new library.

Woomer also has found, on his South American projects, that there is no such thing as "cheap labor." His recent report on mining facilities in Colombia referred to the Indian and Negro workers in the area, and their primitive way of life. "Any industrial project put into the community must bring with it housing, schools, hospitals, utilities, and all of the other population installations essential to the change," the report stated. "The need for all of these costs and responsibilities has led most engineers into subscribing to the statement that there is no such thing as cheap labor anywhere over the world."

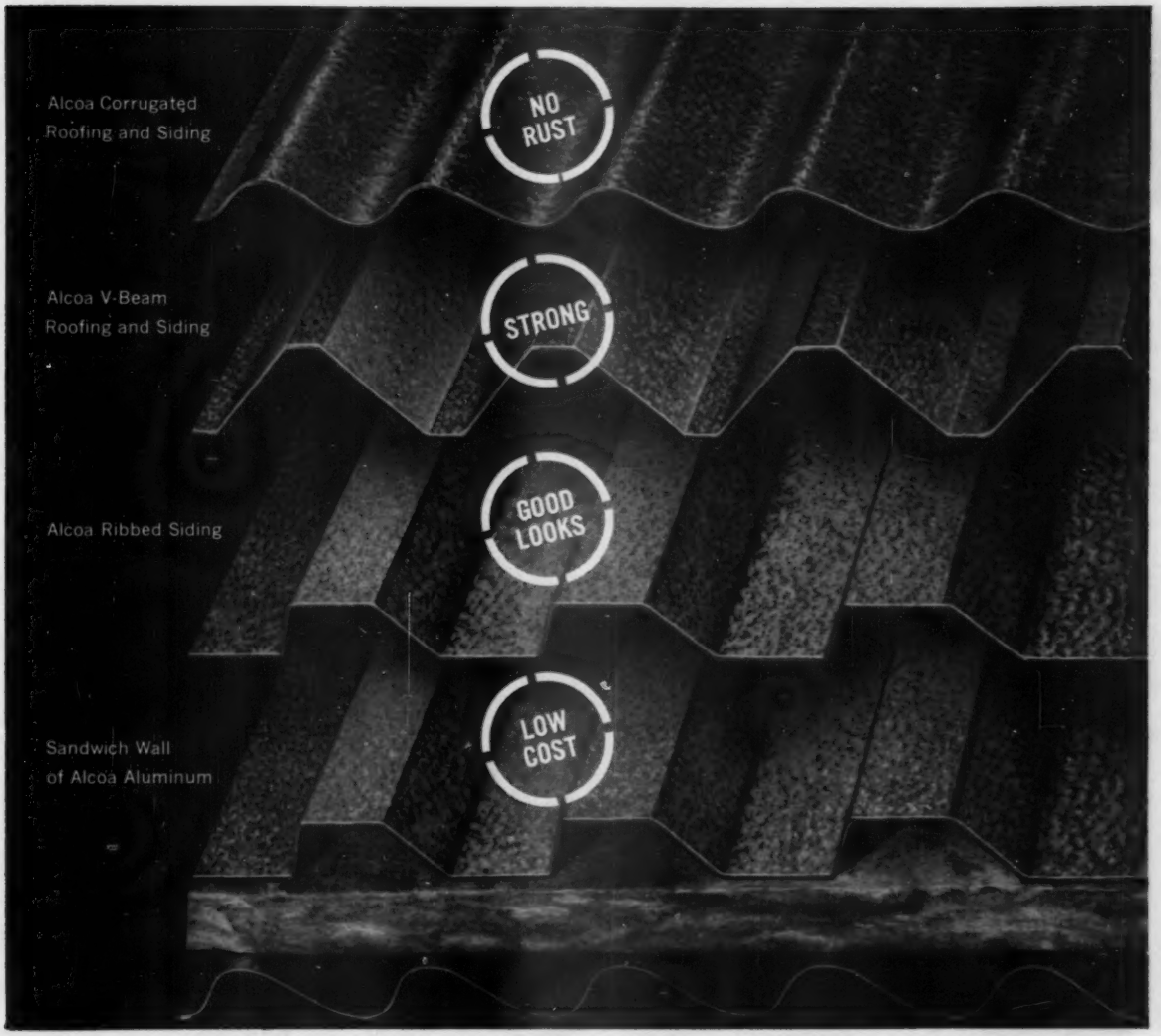
"Unity through EJC"

As the president-elect of the Miners, Woomer was asked his opinion of current "unity" discussions.

"Any unity of professional organizations should be under the umbrella of the Engineers Joint Council," Woomer declared. "If the EJC is not operated to the satisfaction of its constituent organizations, then it can be changed." But he sees no need for delegating ethical, professional, and educational responsibilities to separate groups.

Woomer also referred to the recent division of the American Institute of Mining Engineers into Mining, Metallurgical, and Petroleum entities.

"It has worked out very well," Woomer declared. "I am judging by the one thing I think is most important. The present organizational arrangement renders an increased service to all members." ▲▲



FOUR REASONS WHY

PLANT CONSTRUCTION IS GOING ALUMINUM

Save construction money now and maintenance costs later with these Alcoa® Aluminum Industrial Building Products and Materials . . . for both new plants and plant expansion:

1. Humid atmospheres and industrial fumes mean nothing to Alcoa Corrugated Roofing and Siding. Once up, that's it! No painting or expensive maintenance of any kind ever needed.

2. Aluminum-clad buildings can be *strong buildings* with Alcoa V-Beam Roofing and Siding. Safely carries 30 lb/-sq-ft uniform load on a 10-ft purlin spacing.

3. Aluminum-clad buildings can be *good-looking buildings* with Alcoa Ribbed Siding. This configuration makes buildings clean-lined with good vertical shadows.

4. Sandwich wall of Alcoa Aluminum is the lowest cost insulated metal wall system known: With a "U" value of .155, it has three times the insulating value of 8-in. brick. Goes up fast, too. Permits economical air conditioning.

All of these materials offer the benefits inherent in aluminum—corrosion resistance, low cost and good looks. They are sold and erected by Alcoa Approved Applicators. For the name of the Applicator near you, contact your Alcoa sales office, or write: Aluminum Company of America, 864-L Alcoa Building, Pittsburgh 19, Pennsylvania.

ALCOA ALUMINUM
INDUSTRIAL BUILDING PRODUCTS
ALUMINUM COMPANY OF AMERICA

Your Guide to the Best in Aluminum Value

ALCOA THEATRE
Fine Entertainment
Alternate Monday Evenings

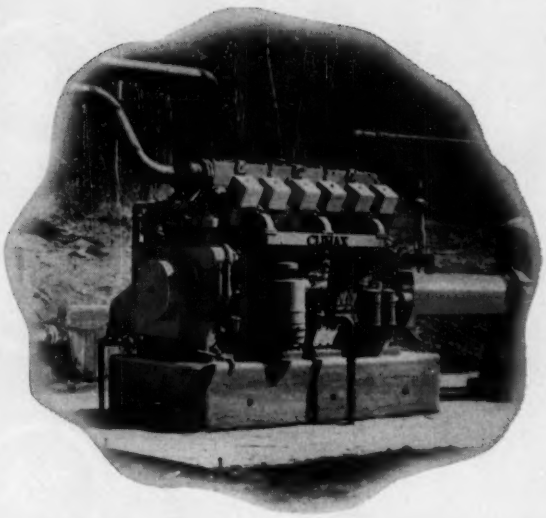
CLIMAX OFFERS MORE THAN ENGINE POWER

It's convincing enough to know that you bought the best engine for your service, but it's a lot more convincing to know that the parts and service man is just a quick telephone call away—*just in case you need him.*

This is one of three important reasons...our customers tell us...why they buy and are so satisfied with Climax Engines. Here is a recent comment:

"I bought my Climax Engine because I was able to select the one just right for my job. They showed me how easy it was to maintain, and this has proved completely true. What's more, I am more satisfied than ever now that the new Waukesha-Climax setup gives me the best service facilities I could ask for."

Get the complete facts from your Waukesha-Climax Distributor.



Climax Offers Expert Nationwide Service

WAUKESHA-CLIMAX DISTRIBUTORS

EAST

Maryland: Baltimore
C. V. FOSTER EQUIPMENT CO.

Massachusetts: Boston
NEW ENGLAND ENGINE & PARTS CO.

Fair Haven
HATHAWAY MACHINERY CO., INC.

New York: Buffalo
H. D. TAYLOR CO.

New York City
GENERAL MACHINE PARTS CO., INC.

Pennsylvania: Philadelphia
AUTO GEAR & PARTS CO., INC.

Clearfield, Pittsburgh
MOTIVE PARTS CO. OF PENNSYLVANIA

Virginia: Richmond
RICHMOND AUTO PARTS, INC.

West Virginia: Bridgeport
MOTIVE PARTS CO. OF PENNSYLVANIA

Charleston
OIL WELL SUPPLY CO.

SOUTHEAST

Florida: East Tampa, Jacksonville
M. D. MOODY & SONS, INC.

Miami
SIMPLEX SALES COMPANY, INC.

Georgia: Atlanta
POWER SERVICE CO.

North Carolina: Charlotte, Fayetteville
SOUTHERN BEARINGS & PARTS CO.

MIDWEST

Illinois: Chicago
MOTIVE PARTS CO. OF AMERICA, INC.

Grayville
OIL FIELD MOTOR SERVICE CO., INC.

MIDWEST (Continued)

Indiana: Indianapolis
EAGLE MACHINE CO.

Iowa: Waterloo
LEWIS MOTOR SUPPLY, INC.

Kansas: Great Bend, Wichita
KANSAS ENGINE & MACH. CO., INC.

Kansas City
AAA ENGINE & ELECTRIC, INC.

Kentucky: Lexington
WOMWELL AUTOMOTIVE PARTS CO.

Michigan: Detroit
R. G. MOELLER CO.

Minnesota: St. Paul
PARK MACHINE, INC.

Virginia
NORTHERN ENGINE & SUPPLY CO.

Missouri: St. Louis
HELMSING BROTHERS, INC.

Nebraska: Omaha
SIDLES CO.

Ohio: Cincinnati
CINCINNATI ENGINE & PARTS CO.

Cleveland
WEPCO EQUIPMENT COMPANY

Columbus
G. W. HOLMES CO.

Wisconsin: Green Bay
PAYNTER EQUIPMENT CORPORATION

SOUTH CENTRAL

Alabama: Birmingham
SOUTHERN COACH PARTS, INC.

Louisiana: New Orleans

Mississippi: Natchez
REAGAN EQUIPMENT CO.

SOUTH CENTRAL (Continued)

Tennessee: Memphis
BERRY EQUIPMENT CO.

Nashville
PRECISION PARTS CORPORATION

SOUTHWEST

Arizona: Phoenix

Louisiana: New Iberia, Shreveport

New Mexico: Hobbs
WAUKESHA SOUTHWESTERN ENGINE & PARTS CO.

Oklahoma: Duncan, Seminole
HOPEMAN EQUIPMENT CO.

Oklahoma City
WERME SUPPLY COMPANY

Texas: Abilene, Corpus Christi, Dallas, Houston, Kilgore, Odessa, Pampa, San Antonio, San Juan, Wichita Falls
WAUKESHA SOUTHWESTERN ENGINE & PARTS CO.

ROCKY MOUNTAIN

Colorado: Denver
WAUKESHA ENGINE & EQUIP. CO.

Idaho: Boise
D. N. NORDLING PARTS CO.

Montana: Great Falls

New Mexico: Farmington

North Dakota: Williston
WAUKESHA ENGINE & EQUIP. CO.

ROCKY MOUNTAIN (Continued)

Utah: Blanding, Salt Lake City
THE LOVE MACHINE CO., INC.

Wyoming: Casper
WAUKESHA ENGINE & EQUIP. CO.

WEST

California: Avenal, Bakersfield, Castaic, Los Angeles, Santa Maria, Taft, Ventura
WAUKESHA SOUTHERN CALIFORNIA

Emeryville
WAUKESHA PACIFIC EQUIPMENT CO.

Eureka
B & S SUPPLY CO.

NORTHWEST

Oregon: Portland
TRUCK & INDUSTRIAL EQUIPMENT CO.

Washington: Seattle
PISTON SERVICE, INC.

ALASKA

Anchorage:
AIRPORT MACHINERY CO., INC.

CANADIAN DISTRIBUTORS IN:

Edmonton, Alb., Montreal, Que., Toronto, Ont., Vancouver, B.C., Winnipeg, Man.

CLIMAX

A complete line of gas, gasoline or butane engines.

6 cylinder to V-12. Maximum basic engine ratings: 40 to 605 hp. at 1200 rpm.

CLIMAX ENGINE MANUFACTURING CO.
• DIVISION OF WAUKESHA MOTOR COMPANY •

FACTORY—CLINTON, IOWA

the fan room than Mr. Jones, yet . . .

both men work comfortably at the same temperature!

when ducts are *fitted square and tight* with Johns-Manville semi-rigid Spintex Insulation

SEMI-RIGID SPINTEX® works two ways to lessen heat loss, stop condensation: first, with low conductivity . . . then, with its square, tight fit. The structural strength of this material, which is fastened snugly to duct surfaces with pins and clips, prevents "ballooning" due to duct leakage. And butted or mitred joints eliminate stretching and thinning of the insulation at corners. Instead, there's a full thickness of Spintex—with full protection against heat loss and condensation—over the *entire duct area.*

This two-way "edge" in insulating effectiveness is the big reason why leading engineers everywhere specify semi-rigid Spintex . . . for factories, institutions and office buildings of every description.

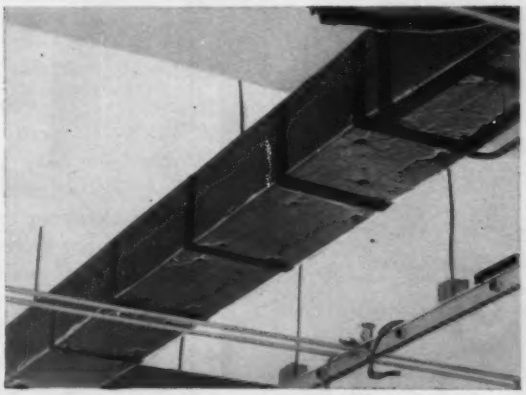
Produced by a new Johns-Manville spinning process, today's Spintex offers more insulating value than ever. Its mineral fibers are smaller in diameter, and substantially more uniform. This improved fibrous structure adds countless heat-blocking dead-air spaces per cubic inch to help keep working temperatures precisely the same throughout the structure . . . with minimum operating costs!

Your Johns-Manville sales representative will be pleased to send you information, along with samples of Spintex and J-M facing materials. Why not call him today. Or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

LESS HEAT LOSS...NO CONDENSATION AT CORNERS!
Semi-rigid (not flexible) Spintex fits squarely and tightly all duct surfaces. Stretching and thinning at corners, unavoidable with wrap-around insulations, are eliminated completely. Instead, Spintex retains full thickness everywhere to stop heat loss and condensation. Its structural strength prevents "ballooning."

FACED FOR ANY SPECIALIZED NEED!
J-M offers you a facing to meet any vapor condition, incombustibility requirement or decorative need. Provides good base for plaster finish . . . or where no facing is indicated, Spintex presents an attractive appearance with trim, tidy joints.

INSTALLS QUICKLY . . . ECONOMICALLY.
Spintex is clean, sanitary and "friendly" to handle. It cuts readily with an ordinary knife. Installs quickly, easily, even when ducts are curved or in difficult-to-reach areas.



AIA FILE NO. 37-D-1-2

JOHNS-MANVILLE

Readers' Comment

CE Promotes the Profession

Sir:

Your very fine publication has done more to promote and excite the interest of the engineer in private practice than any other publication in this country. Additionally, it has materially interested the engineer in private practice in problems which at one time were thought to be provincial in nature, and now are known to be, and perhaps generally accepted, as national problems with a great similarity in every locality. Like television, at least in one respect, CONSULTING ENGINEER magazine brings the rest of the world into our living room.

Hueston M. Smith, Sec.
Consulting Engineers Council

Correction from France

Sir:

I have to rectify the short article that you have published in the August number of CONSULTING ENGINEER on your visit to Paris.

I am not secretary of the Association of Consulting Engineers of France. The secretary is our congenial colleague Pamelard.

I am president of the 3rd Group, "Consulting Engineers of Industry and Agriculture," and a member of the board of directors of the Association. I am also in charge of international relations with other associations belonging to FIDIC. It was in this capacity that, with the aid of my colleagues, I exerted my efforts to make the visit of our American colleagues to Paris as profitable and as enjoyable as possible. If I have succeeded, even in part, I shall be especially happy.

F. Ernstein
Wasquehal (Nord)
France

• READERS CAN LEARN MORE ABOUT THE FRENCH ASSOCIATION ON PAGE 154.

In Agreement

Sir:

As a public relations man – and as an engineer – congratulations on your fine editorial in the October issue of CONSULTING ENGINEER.

We have seen the kind of sandbagging to which you refer, and not only is it unethical, but it leads to complete destruction of the public relations man's ability to work with editors in the future.

It does not hurt to make your point – over and over.

Stanley C. Marshall
Lando Advertising Agency
Pittsburgh, Pa.

All is Far From Well

Sir:

Unlike most technical magazines I receive, your publication is read fully. For that reason there are a few points of view, which I notice, repeated from time to time in the biographies, articles, and comments which call for criticism. They are:
1. The use of graduate engineers as permanent draftsmen-designers.
2. The marked prejudices in employing high class-rank graduates

against graduates with lower class standing.

3. The effect of the static rates of gross fees on the work pressure and compensation of employee engineers.

4. The continual reference to the incompetent engineer or designs without a proper frame of reference standards.

5. The bad attitude to constructive publicity by some major consulting engineering firms.

Law and medicine graduates spend their early years as law clerks, interns, and residents at low pay to gain practical experience; eventually they either become good lawyers or doctors or quit but do not spend a lifetime at low paid drudgery. However, engineer graduates are "put on the board" and their employers intend that they shall stay there because it is profitable to use engineers' skills at draftsmen-designers' wages.

It is an astonishing fetish with employers to place a high value on school marks yet it is a matter of record that achievement and great ability do not necessarily coincide with good school standing. There are too many big men without degrees or who barely got them. The evil of this situation is that men of ability who for good reasons sometimes made low marks are unable to get a good start or buck prejudice so that they are licked from the start.

Again, a company will state too low fees, planning on taking it out of the hides of their employees by working them on close time limits, too low pay, and no paid overtime, often all three together. In this way the company actually makes its profit out of the employees. It is strange why engineer firms do not make their fees adequate in view of their prime contribution to the project. This attitude also adds to the disdain in the public mind. It is a fact that promoters of projects will pay what a project is worth, but it is human craft not to pay any more

than the engineers' evaluations of themselves. More than one corporation head has said it.

A number of statements have appeared using the expression "incompetent engineer or design" (frequently in my hearing "overdesigned") to derogate certain projects. Who are the judges and what standards are used? Is the Brooklyn Bridge of incompetent design because of excess of material or uneconomical placement compared to the Vancouver Bridge? There is a looseness of thinking in this regard which assumes the holder of a top well-paid job is a proper judge or capable of setting standards. This is a fallacy.

As an occasional writer for a foreign technical publication, I have been astonished at the number of consultant firms handling multi-million dollar projects who show picayune, childish attitudes toward favorable publicity of their projects. They act as if the furnishing of some prints, photographs, and notes was a gross imposition. Reactions range from churlish responses to refusals exhibiting inflated egoism and avarice.

To sum up, these are a few of the observations which indicate that all is far from well in the engineering profession and the responsibilities for the conditions are mainly on the engineers themselves.

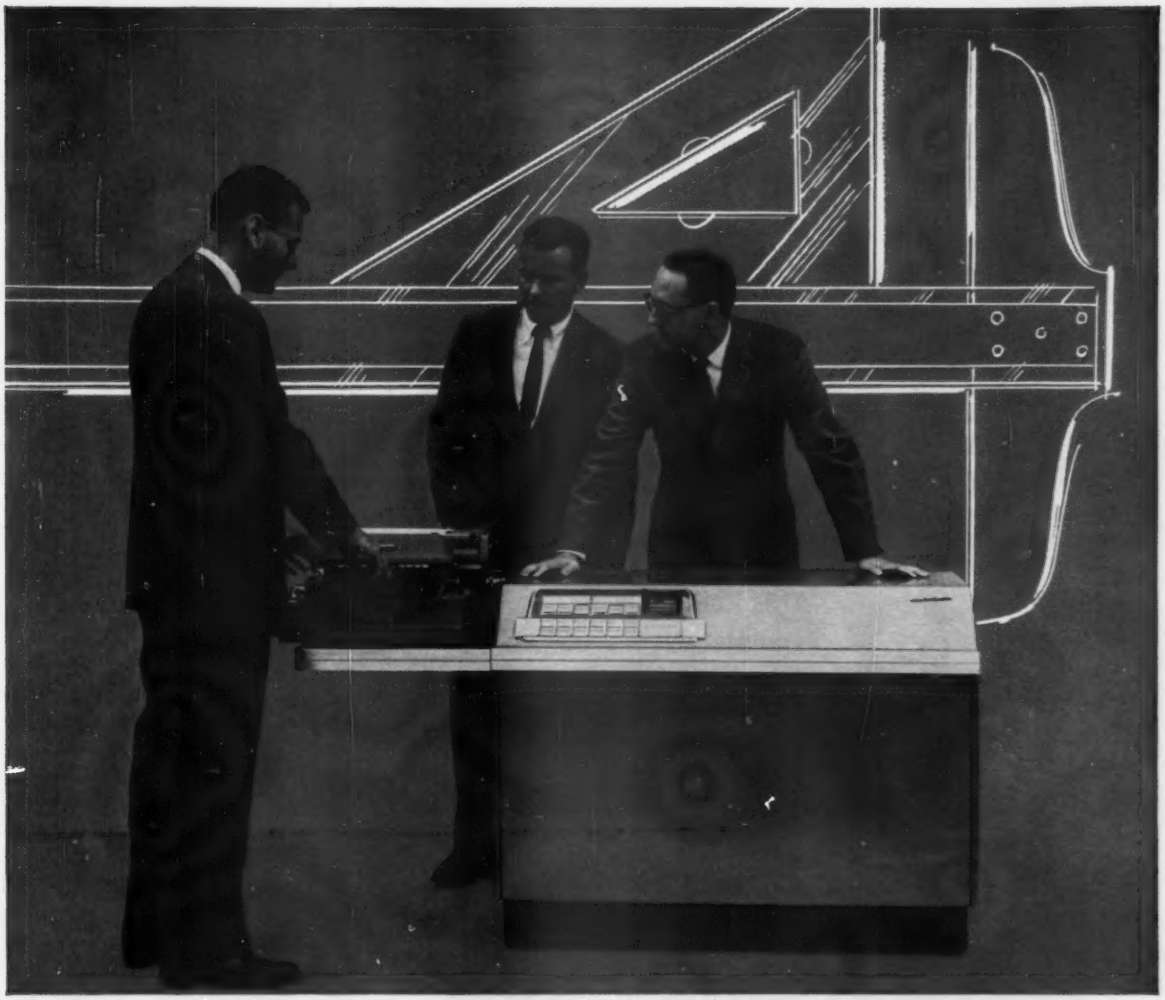
Ivor B. Yassin
Professional Engineer
New York, New York

Prestressed Concrete

Sir:

I note with interest your comment on page 30 about prestressed concrete and Mr. Arthur M. James' article on page 98, in the October issue of CONSULTING ENGINEER.

The statement by Mr. James that the work in prestressed concrete did not start in the United States until about 1950 is not correct. The Leonard Construction Co., who at the time had their office in the Graybar Building, New York, had in 1941 a contract with



Get greater productivity in highway design with this powerful electronic computer

ROYAL PRECISION LGP-30

Large capacity... easily programmed and operated... mobile... low in cost

Here, at last, is a complete general-purpose electronic computer within the reach of every civil engineering firm. Remarkably small in size, completely mobile, LGP-30 saves time and money in the design of dams, bridges, highways . . . eliminates the tedium of routine calculation by bringing high-speed computation *right to your desk.* And at the lowest cost ever for a complete computer system!

Faster answers; unusual capacity. With speed and memory (4096 words) comparable to computers many times its size and cost, LGP-30 gives you fast, effortless answers to such problems as cut and fill, grade profile, traverse closure, field stakeout, bridge design, highway alignment. Self-cooled, LGP-30 operates from any convenient wall outlet, gives you stored-program operation for greater flexibility. (For example, highway design geometry breaks down into approximately 14 different component problems; these may all be stored in the LGP-30 and used in whatever combination is required.) Thus you save valuable time, cut costs, better your competitive position.

Easy to operate and program. LGP-30's remarkably simplified controls may be operated with only minimum computer experience. Answers are printed out directly . . . do not require deciphering. Programming is easily learned. A library of sub-routines, plus programs for a wide variety of applications, are available.

Wide range; exceptional value. The most powerful computer of its size yet developed, LGP-30 is the greatest value in today's market. Smallest initial investment ever for a complete computer . . . low operating and maintenance costs. Service available coast-to-coast.

For further information and specifications, write Royal McBee Corporation, Data Processing Equipment Division, Port Chester, N. Y.

ROYAL McBEE

data processing division

the U.S. Navy for the construction of some 49 prestressed concrete tanks. We designed these and built them underground for the storage of fuel oil. Each tank was about 40-ft high and 135 feet in diameter. The work was completed about 1943. I believe our design also was used for construction of some tanks in the Boston area. I was chief engineer and in charge of the New York office until about 1945 when I went to Mexico to build a cement plant at Leon, Guanajuato.

Leo Dolkart
Consulting Electrical Engineer
Chicago, Illinois

Hopes CEC Joins FIDIC

Sir:

With great interest I read your "Atoms in Action" column in the September issue, especially the section "Competition Still a Problem" dealing with the matter of professional services offered by university professors in direct competition with the consulting engineer.

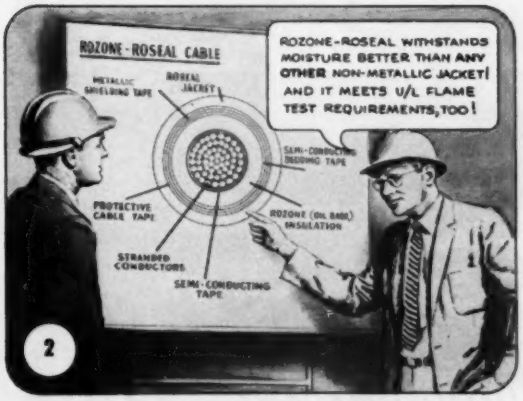
In Germany, too, the problem of routine engineering tasks being worked out by university professors and students is the subject of serious consideration.

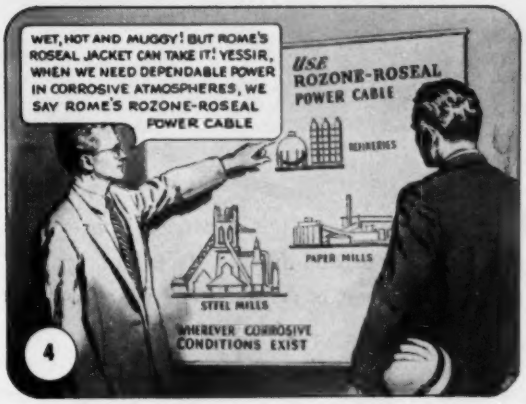
But apart from this, I found out again that problems of the consulting engineer do not differ from country to country. This fact has been proved in each meeting of FIDIC arising from the good cooperation between the engineering associations of the joined nations.

I am absolutely sure that our American colleagues of the Consulting Engineers Council – which I do hope in the near future will be a member of FIDIC – will be quite familiar with the problems, tasks, and sorrow-like schedule of fees or with the questions concerning taxes or the relationship between the architect and engineer over here. They will have the feeling as if they had been members for years.

Dipl. Ing. Hans Walter
Consulting Engineer
Essen, Germany

DANGER! CORROSION AT WORK...





Available in voltage ranges through 15 kv Rozone-Roseal preferred power cable may be installed in air, conduit, underground ducts, or directly in earth. Your choice of premium ozone-resistant insulations: Rozone (oil-base) or Rozone A (butyl-base). For complete information, contact your nearest Rome Cable representative and ask for Bulletin RCD-700. Or mail the coupon today.

ROME CABLE
CORPORATION

A matter of FACT

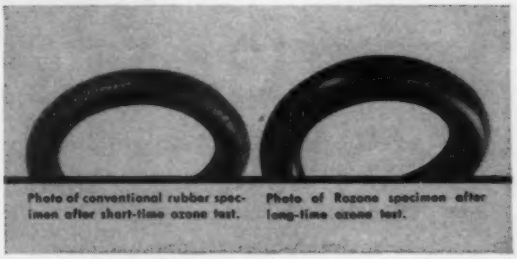


Photo of conventional rubber specimen after short-time ozone test. Photo of Rozone specimen after long-time ozone test.

Rozone insulation is high in dielectric and impulse strength and has excellent resistance to corona and ozone cutting.

FREE BULLETIN describes the benefits of Rome's preferred high-voltage power cables.

ROME CABLE CORPORATION
Department 720, Rome, New York

Please send me a copy of the new Rome Cable Bulletin RCD-700.

Name .....

Title .....

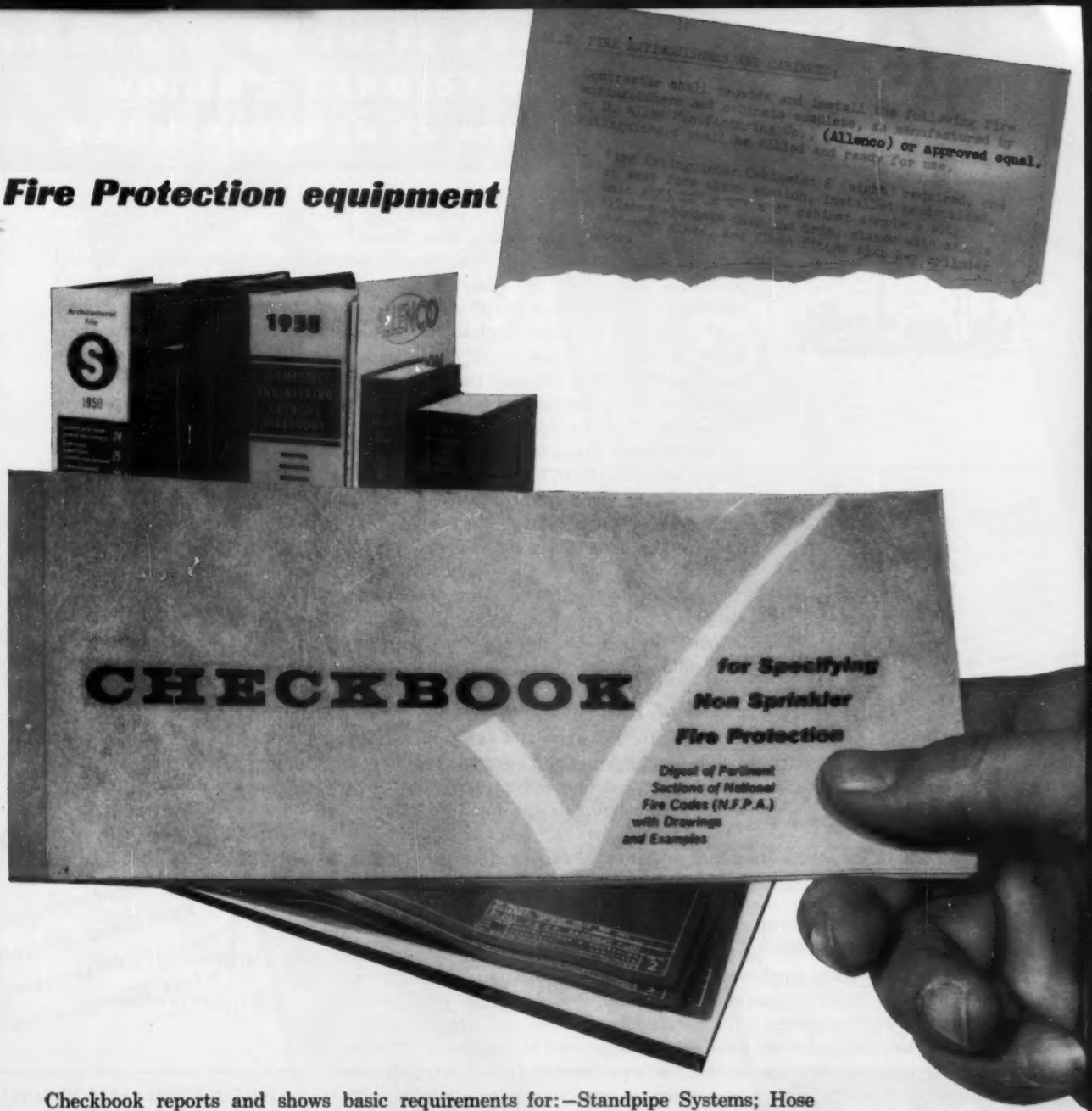
Company .....

Address .....

.....

Type of business .....

Fire Protection equipment



Checkbook reports and shows basic requirements for:—Standpipe Systems; Hose Stations; Extinguishers; Exterior Centers. It includes "coupon specifications" forms for major items, which may simply be removed and filled-in for easier spec-writing. It also lists references for details digested here.

Checkbook is unique, practical, valuable. Your copy will be sent on request. Write or phone your Allenco*nsultant* (listed in Yellow Pages) or direct to home office.

ALLENCO *Since 1887*

W. D. ALLEN Manufacturing Co.

Room 500 Allenco Bldg. 566 W. Lake St. Chicago 6

The Readers' Guide

Airport Engineering

The heyday of the railroad has passed. The passenger station is no longer the hub of the city's transportation system. Grand Central in New York and Union in Chicago are still busy, still full of people, but most are commuters or railroad employees. It is a pity this is so, for there are still thousands of us who would rather take the train than the plane for an overnight trip. We scarcely can afford it. The railroads are determined to kick us out. They say we cost them too much money, particularly if we are so finicky as to want to use a Pullman car. If we eat in the diner, they say they lose even more money on a $1.50 meal served for only $4.80 at an overcrowded table. Yet, more people are taking more trips more frequently. They are using the planes. As a result, a city's transportation hub has shifted from Union Station to Municipal Airport, some five or ten miles away. This is no simple shift, and it is one that involves a vast amount of engineering. For the consulting engineer it is an opportunity to apply new ideas to a massive development program. It also represents billions of dollars of design and construction that will continue to increase for many years. It will call for work of all branches of engineering – civil, structural, mechanical, electrical, and even chemical. It involves not only runways but terminals, hangars, and highways. It is a monstrous task, but it must be done right or the passengers and pilots will be damning the engineers from now on. Many of the airports of the future are being built today, airports designed to handle many more passengers and many more planes–all in more of a hurry than ever. In a special project report, starting on page 82, we have gathered the best ideas of modern airport design. There are new ideas–prestressed steel–and new applications of old materials. Air conditioning and heating, lighting and materials handling, all these are involved. Then there is the literally deafening noise from the roaring jets. All require the best and most original engineering design. Each is a challenge to the consulting engineer.

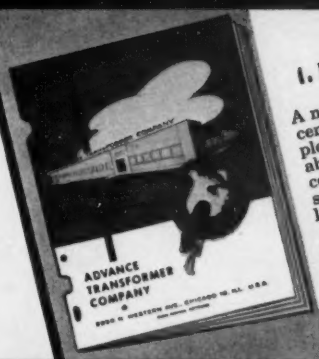
Partnership Taxes for Corporations

Corporate practice of engineering is a controversial subject. In some states it is illegal, in some it is restricted, while in others it is ignored. Even in states in which it is permitted, some engineers feel it is unethical while others think it is not only perfectly proper but the only sensible way to do business. In those states in which corporate practice is permitted, an engineer's choice between corporate or partnership operation has been made, more than anything else, on taxes. In the past when the firm's income was at one level, it was better, taxwise, to be a partnership; at another income level, the corporate structure was to be preferred. Now all this has changed if the total number of owners of the firm is 10 or less. A small firm now can choose to be taxed as a partnership even if it legally is set up as a corporation. This recent tax revision can save you money. Be sure to read Carl Ristau's article, "Lower Taxes for Small Corporations," page 108.

The Advertisers' Literature Supplement

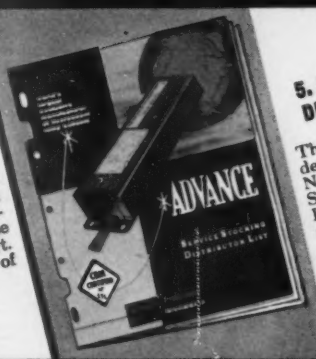
Four times a year, in February, May, August, and November, CONSULTING ENGINEER comes to you in two parts, the regular issue plus a supplement. This Advertisers' Literature Supplement is a collection of short descriptions of the best and most recent bulletins and catalogs offered by our advertisers. We prefer to publish this material as a quarterly supplement rather than to carry it piecemeal as a part of each regular monthly issue. There are two reasons. First, we look upon it as primarily advertising rather than editorial in nature. Therefore, we separate it from our feature stories and our regular departments. More important, as a separate publication it is much more usable. We have found that many readers file the supplement and refer to it when new catalogs are needed or someone wants to know what manufacturer's literature is available and wants to get it in a hurry. We encourage readers to make use of Part II of the current issue.

WHICH ONE OF THESE BULLETINS OFFERED BY THE WORLD'S LARGEST EXCLUSIVE BALLAST MANUFACTURER IS MOST HELPFUL TO YOU?



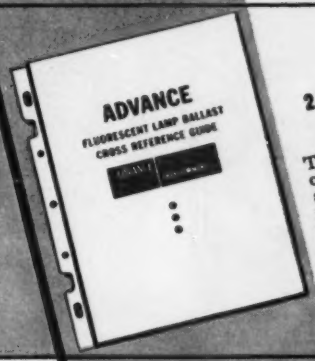
1. BALLAST MANUAL

A new manual on Fluorescent Lamp Ballasts, completely illustrated, tells all about ballast circuits and construction. Fully describes all phases of ballast manufacture, installation and operation. Shows how to test ballasts and measure current, illustrates a new easy-to-use ballast quiet rating chart. Be sure to get a copy of this helpful manual.



5. SERVICE-STOCKING DISTRIBUTORS' LIST

This bulletin completely describes the ADVANCE Nation-wide Service-Stocking Distributor Plan. It lists alphabetically by state and city more than 700 authorized distributors who carry a complete stock of ADVANCE Ballasts to give immediate replacement service for any ballast.



2. CROSS-REFERENCE GUIDE

This guide lists all types of ADVANCE Ballasts, as well as those of other manufacturers. It shows alphabetically the replacement ballast numbers of all popular ballasts in an easy-to-use reference guide.

6. WIRING DIAGRAM AND LEAD LENGTH BULLETIN

A new bulletin for users of Fluorescent Lamp Ballasts gives all the latest available specifications on size and lead lengths of ADVANCE ballasts. Also included are wiring diagrams for preheat, slimline and instant start, rapid start and quick start and circline ballasts.

Only the world's largest exclusive lamp ballast manufacturer offers all this!

3. BUYER'S GUIDE

The world's largest and most complete listing of fluorescent lamp ballasts. Classifies and gives all electrical data including wattage, voltage and dimensions of all ADVANCE Fluorescent Lamp Ballasts.

7. VISA-VOLT®

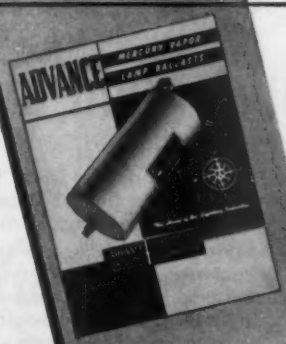
Visa-Volt labelling is an exclusive Advance color coding for instant positive Fluorescent Lamp Ballast voltage identification.

8. ADVAN guard

Advan-guard, another Advance exclusive, is an Internal Thermally actuated protective device that adds years to Ballast life.

INDIVIDUAL PACKAGING

Individual packaging of Fluorescent Lamp Ballasts was introduced by Advance. These convenient cartons have an end label for instant identification, eliminate stocking problems and assure factory-fresh merchandise.



4. MERCURY VAPOR LAMP BALLASTS

This bulletin describes and covers various types of ballasts for mercury vapor lamp operation. Illustrations, diagrams, specifications and engineering data and electrical characteristics are all included.

SEND FOR ONE OR ALL *today!*

ADVANCE TRANSFORMER CO.
TRANSFORMER CO.
2950 NO. WESTERN AVE. CHICAGO 18 ILL. U.S.A.

ADVANCE TRANSFORMER CO.
2950 No. Western Ave.
Chicago 18, Illinois

Circle numbers for Bulletins of your choice.

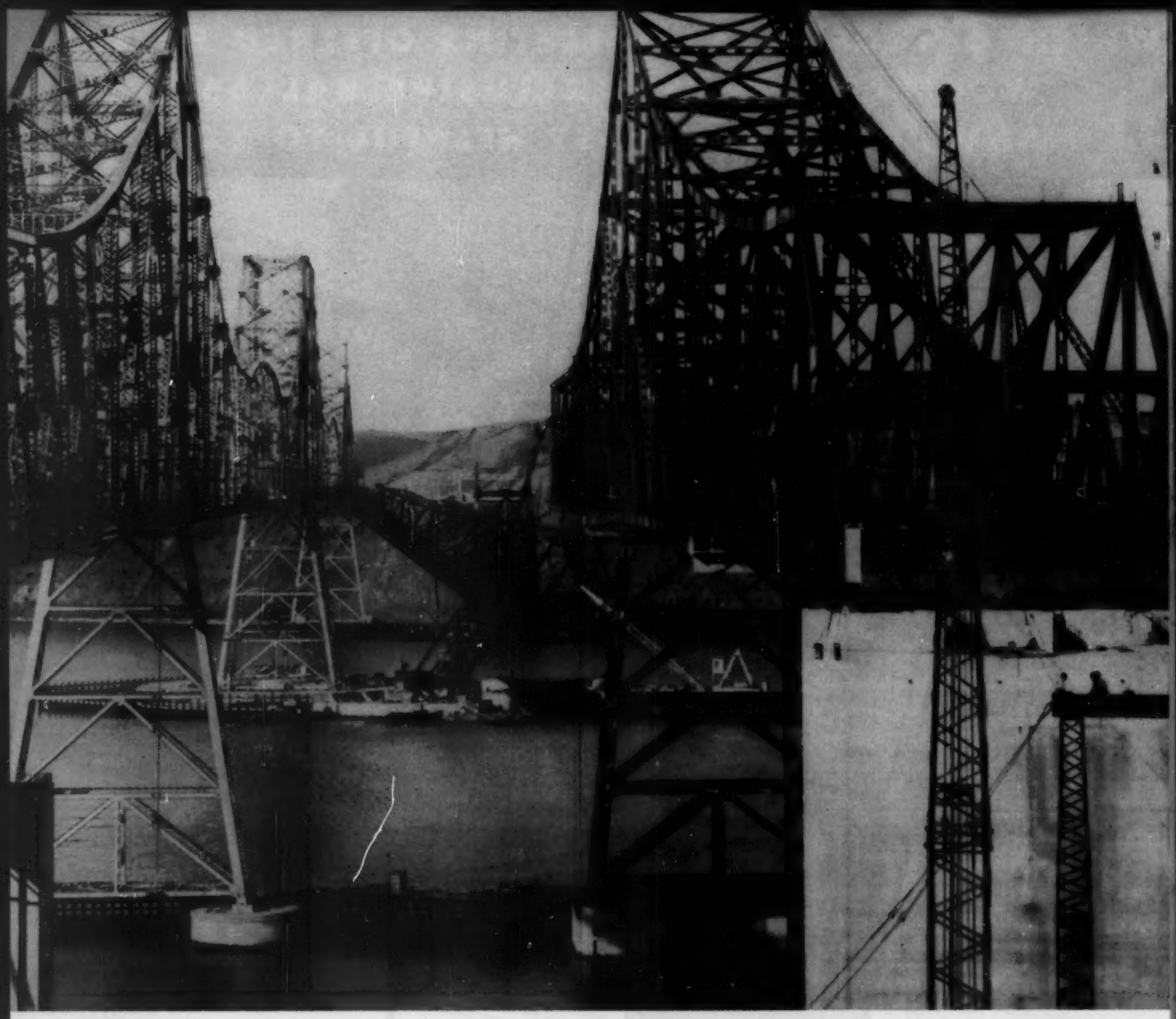
1 2 3 4 5 6 7 8

Name_____

Company_____ Title_____

Address_____

City_____ Zone____ State_____



USS "T-1" Steel Plate now furnished to 100,000 psi minimum yield strength

11% greater strength. USS "T-1" Constructional Alloy Steel can now be furnished to a minimum yield strength of 100,000 psi in plates up to 2½ inches thick. This is in addition to the present types of "T-1" Steel which are still available at a minimum yield strength of 90,000 psi. The new minimum tensile strength—the point at which actual breakage occurs when stressed in tension—has been increased from 105,000 to 115,000 psi. The published tensile strength maximum of 135,000 psi remains unchanged.

Weight reductions up to 50%—or more. Because of its great yield strength, three times that of structural carbon steel, USS "T-1" can be used to save weight in highly stressed members of bridges, TV towers and pressure vessels. Weight savings from 25 to 50% are common. For construction equipment, USS "T-1" Steel's strength, plus high resistance to impact abrasion, boosts payload capacity and increases equipment life.

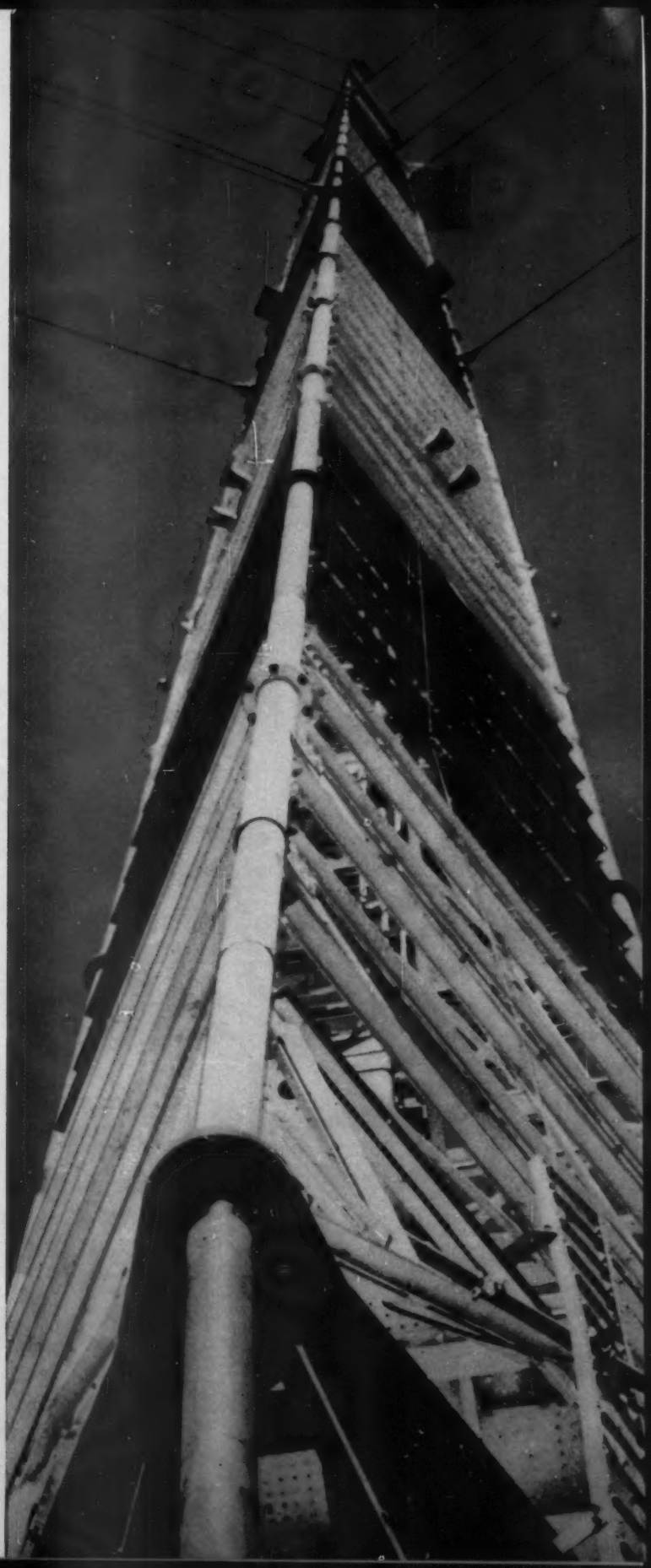
Cost savings up to 11%. The increase in strength at no extra cost amounts to customer cost savings up to 11%. Use of higher design stresses reduces the fabricating, welding and shipping costs because less material is needed.

The new strength data were arrived at after continuous tests on production lots of USS "T-1" Steel Plates at our Homestead Works. Actual experience confirmed the tests, and it became apparent that higher mechanical properties inherent in USS "T-1" Steel could be consistently developed. **Free book.** For complete technical information on USS "T-1" Steel, write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS and "T-1" are registered trademarks

USS "T-1" Steel saves $800,000. By using this stronger, weldable steel in the heavily stressed members of the New Carquinez Bridge in San Francisco, weight of some members was cut almost in half, with an overall savings of $800,000.

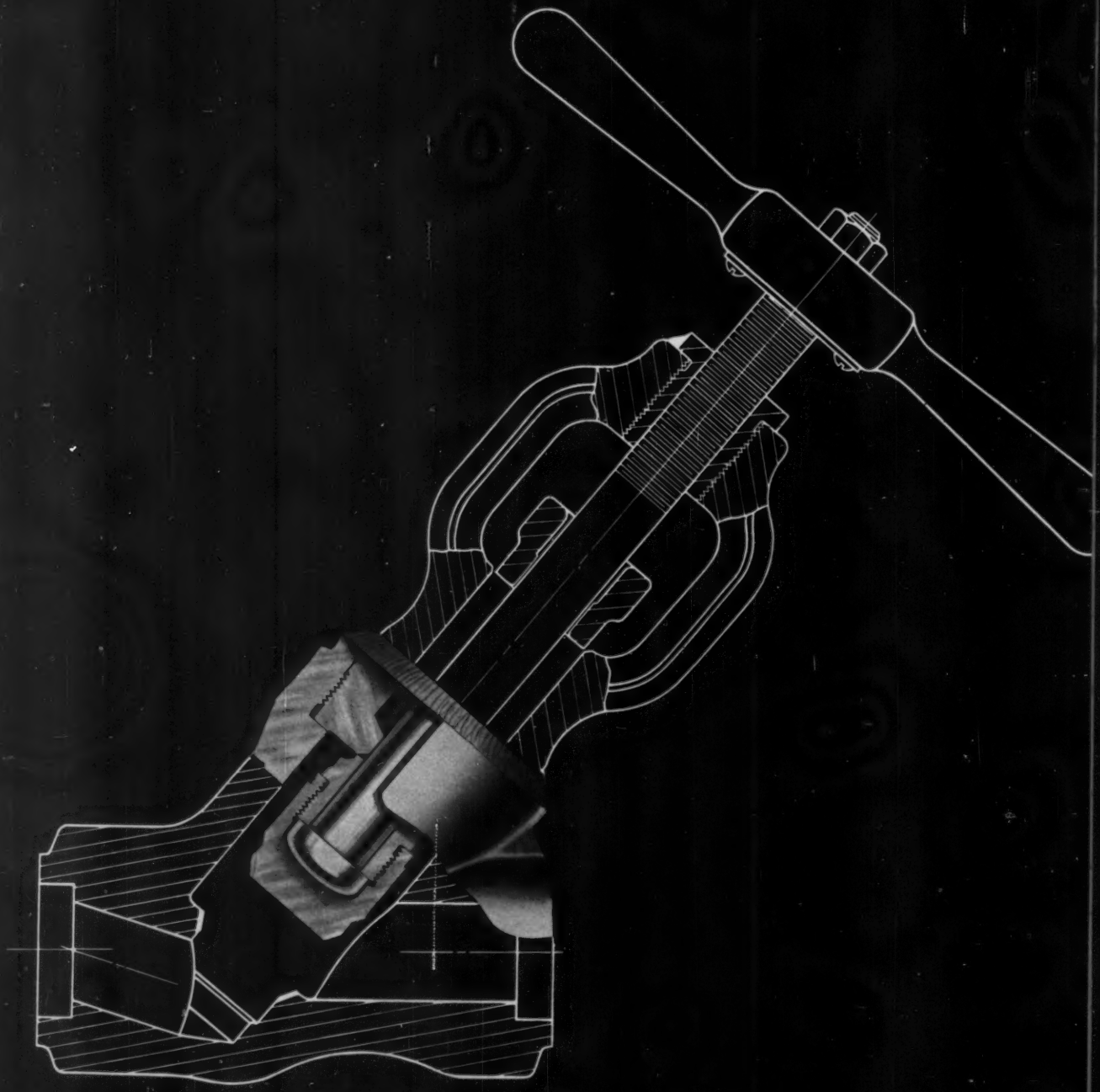
TV tower costs cut 15%. Because of its great strength, USS "T-1" Steel was used in the bottom 838 feet of this 1,199-foot TV tower. The cross-sectional area of the legs was reduced by 44%, resulting in a material and fabrication saving of 15%.



USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel



EDWARD UNIVALVE

What's New from Edward Valves, Inc.

New Products . . . Problems and Solutions. . . Information on Steel Valves from Edward, Long-Time Leader in the Field!

Shoulder, thread and weld make

Superior "Univalve" Body-Bonnet Joint

Edward valve researchers were assigned three main goals in developing the Univalve* . . . first, design a globe valve for high pressure-temperature service—that would *stay* leak-proof . . . second, eliminate—as far as possible—the necessity for maintenance . . . third, fabricate all pressure-containing parts of forged steel for maximum strength and soundness.

How well they succeeded is illustrated by this fact: in many hundreds of advanced temperature-pressure applications all over the world, Edward Univalves have given consistently superior service. The *reason* for this is simple . . . Univalves, properly maintained, simply do not leak.

WELD SEALS JOINT

In the Univalve, a bead of fine-grained weld seals the body-bonnet joint to maintain perfect pressure tightness in any service. A guiding section above the threads protects them from the seal-weld; the threaded section and body shoulder carry the pressure load and insure accurate alignment. The rugged threaded bonnet—with opening just large enough to accommodate the stem—provides a pressure-tight backseat. The radiused disk nut contacts the beveled bonnet backseating surface . . . isolates packing from line pressures and temperatures . . . stretches packing life.

While the Univalve rarely needs attention, even its tough integral Stellite seating surface *can* become scored under some conditions. To strip for inspection and possible re-lapping, the seal-weld is easily removed by machining or grinding or with carbon arc or oxy-acetylene scarfing tip. Besides simple disassembly and positive backseat advantages, Univalve's one-piece gland eliminates possible small parts loss during repacking.

IMPORTANT UNIVALVE FEATURES:

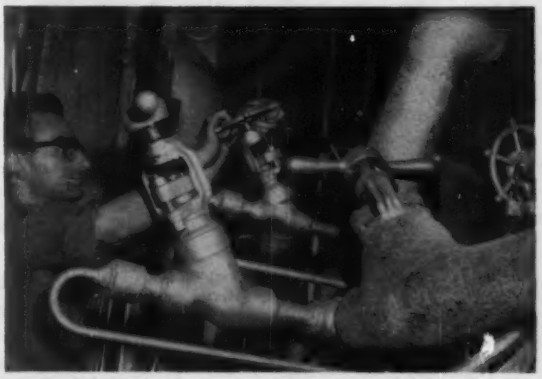
Streamlined Flow Path reduces pressure drop, minimizes wear-producing turbulence. Univalve meets requirements for blow-off service.

Simple Packing Adjustment keeps packing maintenance down. Sturdy gland bolts, roomy yoke, one-piece forged gland.

Easy Open—Tight Close Operation of all Univalves 1¼" to 2½" made a reality with the exclusive Edward Impactor* handle.

Continuous Stellite Ring applied to body and disk, retains hardness under temperature and resists wear.

IDEAL FOR BLOW-OFF SERVICE. Univalves meet ASME Code for blow-off service and are adaptable for all high pressure installations.



4500 LB UNIVALVE in service at Ohio Power Company's supercritical Philo station.

*T.M. Reg. U.S. Pat. Off.

EDWARD VALVES, INC.

Subsidiary of ROCKWELL MANUFACTURING COMPANY

1210 West 145th Street, East Chicago, Indiana

Edward builds a complete line of forged and cast steel valves from ⅛" to 18"; in globe and angle stop, gate, non-return, check, blow-off, stop-check, relief, hydraulic, instrument, gage and special designs; for pressures up to 7500 lbs; with pressure-seal, bolted, union or welded bonnets; with screwed, welding or flanged ends.

From the Editor's

Tranquil Tower

IN JUST A FEW DAYS, Consulting Engineers Council will be holding its semiannual board of directors meeting, in Dallas, Texas. The Council is now about three years old, and it has to its credit some major accomplishments despite its necessary preoccupation with organization and operation details during these formative years.

While this magazine never has had any official connection with the Council, we have been much interested in its activities and have reported fully on every meeting of the board of directors. Since we believe that this group is potentially the most important of all associations for consulting engineers in this country, we are going to suggest to the Council some of the steps we feel necessary for fulfillment of its obligations in the future.

1. The Council must adopt a new and more functional operating procedure. In the past it was perfectly logical to function through a board of directors made up of a delegate and an alternate from each member association. Now that there are 21 associations in the Council and another 10 or 12 considering affiliation, the handling of every detail by vote of the whole board is time-consuming and impractical. Perhaps the most logical solution lies in increasing the size of the executive committee and permitting it to handle the majority of the work now done by the board. The full board, meeting once a year, then could concentrate on constitutional changes and major policy directives.

2. The Council currently is failing to get the full support it deserves from the individual consulting engineer members of its affiliated associations because these members are so far removed from actual participation in the activities of the Council. There is much to be said for the Council's representative type of government, but some method of group participation should be arranged. This could be done by holding a general meeting once a year with all members of the state and regional associations invited. A program could be presented that would put before the whole membership the accomplishments and plans of the Council. This convention of 1000 consulting engineers could replace a semiannual board meeting.

3. The Council not only should encourage but should insist upon certain uniform requirements for its member associations, these to be applicable not only to new members but to old. Among these:

a. Membership in the associations should be by firms and not by individuals. Membership in technical and professional societies is properly by individuals, but the Council is set up to deal with firm activities, business, and economics. It is awkward and unfair for the state and regional associations to permit personal memberships. This is gradually being understood by the associations, but it needs to be adopted as a firm Council policy. This also would solve the old problem of "associate" members (employee engineers in consulting firms) who are not recognized by the Council but are included in the membership of some of the affiliated associations.

b. Membership in all affiliated associations should be broadened. Some of the associations still restrict their membership to engineers in interprofessional practice, while others come close to reversing this membership restriction. Actually, the associations should require only that members be respectable firms of engineers in private practice.

c. Geographically overlapping associations should be combined. There is no point in having a New York City association and a New York State association. The City could function best as a section of the State association. The same is true for the Chicago and the Illinois associations. The Cincinnati association should exist as a separate group only so long as there is no Ohio organization. The Texas groups should be looked upon as one association with two chapters rather than as two separate associations, which in fact they are not.

4. Most important of all, the Council must take action at this Dallas meeting to affiliate with FIDIC, the International Federation of Consulting Engineers. It should avoid haggling about dues and delegates and forthwith accept FIDIC's invitation. Details can be dealt with as they arise. Membership in FIDIC would automatically give the Council an abundance of what it most lacks—history, heritage, tradition, and prestige. ▲▲

You should know more about the new ACF non-lubricated Ball Valve

Now, while you're thinking about it, ask your secretary to have us send you Catalog 1000.

This catalog will give you a full description of the latest product of W-K-M's creative engineering—the ACF non-lubricated Ball Valve.

This new valve was service-tested for 3½ years before it was offered to buyers. Service-*tested* and service-*proved:* in the entire 3½ years, every user reported completely satisfactory results.

It's a great valve, this new one: versatile, rugged, efficient, easy to maintain on those rare occasions when maintenance becomes necessary, a valve you can specify with complete confidence.

So send for Catalog 1000—you should know more about this *new* valve.

Product of W-K-M's *Creative Engineering*

This cut-away picture shows you why this new valve performs so dependably, lasts so long, and is so economical to maintain.

Note the full, round conduit through body and ball that assures full flow through the valve—without turbulence, and with no more pressure drop than through an equivalent length of pipe.

Note the way the ball is suspended between Teflon seats under compression, assuring leakproof service at rated working pressures, or under vacuum, indefinitely.

Note the way actual seating surfaces are sealed away and protected from any abrasive action of the lading flow in either open or closed position.

Available in carbon steel (ASA 150 lb., 300 lb.), and semi-steel (200 lb., 400 lb.). Sizes range from ½" through 6". See Catalog 1000 for full listing of sizes and pressures.

W-K-M

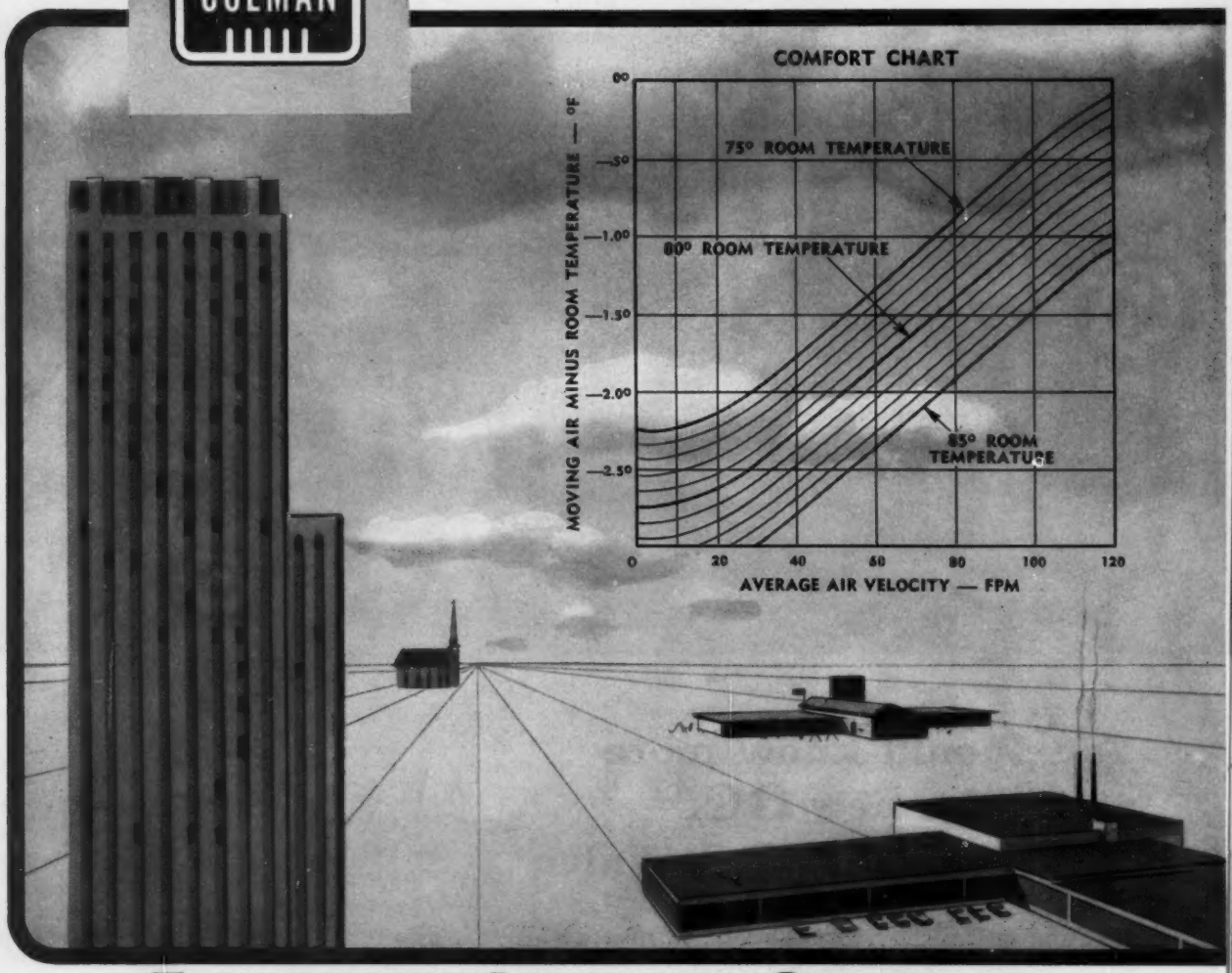
DIVISION OF ACF INDUSTRIES
INCORPORATED
P. O. BOX 2117, HOUSTON, TEXAS
Export Office: 45 ROCKEFELLER PLAZA, NEW YORK, N.Y.

5817

THE MARK OF QUALITY

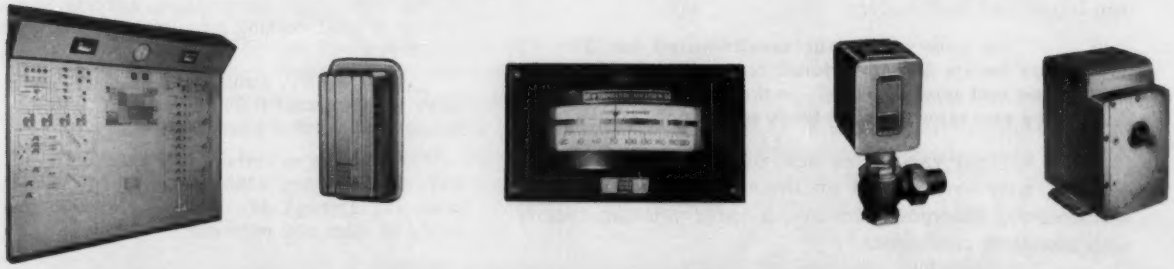
BARBER COLMAN

You can guarantee will



ELECTRIONIC AUTOMATIC CONTROLS...

A complete line of automatic controls for air conditioning, heating, and ventilating service.



ONE SOURCE...UNDIVIDED RESPONSIBILITY.....

every air conditioning job conform to this comfort chart*

* When you combine Electrionic Automatic Controls with Uni-Flo Engineered Air Distribution

It is impossible to provide uniformly comfortable air conditioning without the correct correlation between air movement and room temperature. When occupants complain that a room is alternately too warm, too cool, or too drafty, you can be sure that the correct relationship between air distribution and temperature control has not been met.

The importance of this relationship cannot be overemphasized because an individual's comfort is affected by:

1. **Room temperature.**
2. **Velocity of conditioned air being introduced to the room.**
3. **Temperature of moving air in relation to average air temperature in the room.**

The scientifically correct relationship is plotted on the Barber-Colman Comfort Chart shown at the left. This requires closely coordinated functioning of the system's automatic controls and its air distribution units.

Failure to meet the Comfort Chart requirements is the cause of complaints and costs long after the job is "done." This is the point at which it is difficult to establish responsibility for the faults in the system.

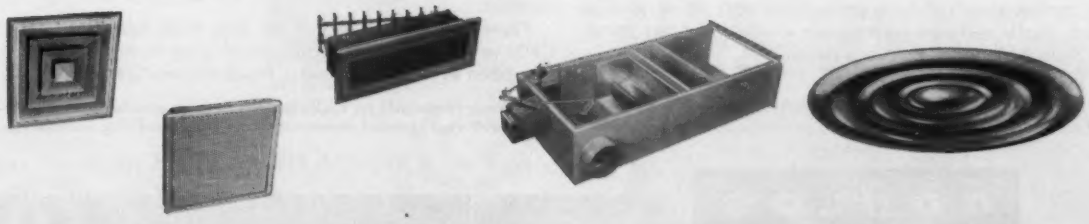
When Barber-Colman Electronic controls and Uni-Flo engineered air distribution are combined on your job, you have complete assurance that the system will function correctly, providing constant comfort to the occupants of the building at all times. Barber-Colman guarantees this and assumes complete responsibility to see that it is accomplished.

Only Barber-Colman offers you years of combined experience in both automatic controls and air distribution — and assumes the *undivided* responsibility for delivering ideal indoor weather. Architect, engineer, owner, and occupant benefit by having this important obligation successfully discharged by a single supplier.

FOR COMPLETE INFORMATION ask for new fully illustrated Bulletin F-8326 which details the benefits of temperature control and air distribution combinations available through Barber-Colman.

UNI-FLO ENGINEERED AIR DISTRIBUTION...

A complete line of air distribution products for better air handling.



....BARBER-COLMAN COMPANY

Dept. K, 1660 Rock Street, Rockford, Illinois

Goulds Fig. 3173
heavy-duty vertical
centrifugal process pump.

YOUR SPECIAL PUMP AT STANDARD PRICES

Need a heavy-duty vertical process pump?

Goulds will build it—in the proved centrifugal style—from standard parts. You save the cost of custom-building; you get fast delivery.

When you want to change vessel depth or pump ratings you merely replace standard stock parts. Units may be adapted in the field. Shafts and pipe columns are available for any pump length from 2 to 20 feet in 6-inch increments.

Other features:

Pump assembly and cover plate form a unit. Interlocking male and female fits keep the unit in permanent alignment.

Internal impeller clearance is easily adjusted from the outside.

Upper bearings can be replaced without disturbing pump or piping. Just remove motor and coupling.

Upper bearing completely protected from pit fumes and weather.

There are types for wet or dry pits, with capacities to 1080 GPM or heads to 290 ft. Vaporproof construction is available. Furnished in all iron or bronze-fitted construction.

Complete details in Bulletin 726.2. Also available in stainless steel and special constructions for handling corrosives.

GOULDS
PUMPS FOR INDUSTRY

GOULDS PUMPS, INC.
SENECA FALLS, NEW YORK
Main Office and Works
Branches and Representatives in all principal cities

The Legal Aspect

MELVIN NORD, P.E.
Consultant in Legal and Technical Problems
Patent Attorney

The Law of Real Property: Easements and Profits

RIGHTS IN LAND include present and future possessory rights and certain nonpossessory rights. Among the latter are the "natural rights" of lateral and subjacent support, water rights, and the right to prevent waste. In addition, there are also "rights in the land of another." The most common of these are easements and profits.

Easements

An easement is a right to use someone else's property (the servient estate) in a prescribed way. It is a historically recognized part of the rights constituting ownership that the owner of the land has transferred to the person owning the easement. Thus, the owner of the land may grant to someone else the right to use part of his land as a private right of way, or to the public as a public highway. He still owns the land, but a part of his right to use the land has been granted to someone else, so his real property rights have been reduced. If he sells to another, the buyer can only buy what he has left to sell. Therefore, the easement is not terminated by sale of the servient estate. In fact, the easement lasts forever, unless it was set up to last only for a prescribed period or until a designated event occurs.

The owner of an easement may own this intangible right personally (easement in gross), or its ownership may be attached permanently to another piece of land (the dominant estate), depending on how the easement was created.

Whether or not an easement in gross is assignable to others depends on the manner of creation of the easement. Where the ownership of the easement is vested in whomever is the owner of the dominant estate ("easement appurtenant"), it cannot be kept by the owner of the dominant estate when he sells the dominant estate.

Only a limited number of types of rights in land have historically been recognized as easements:

¶ Easements of light and air—preventing the owner from building on his land so as to block light and air from someone else.

¶ Easements of support, such as a party wall, half of which is owned by the other.

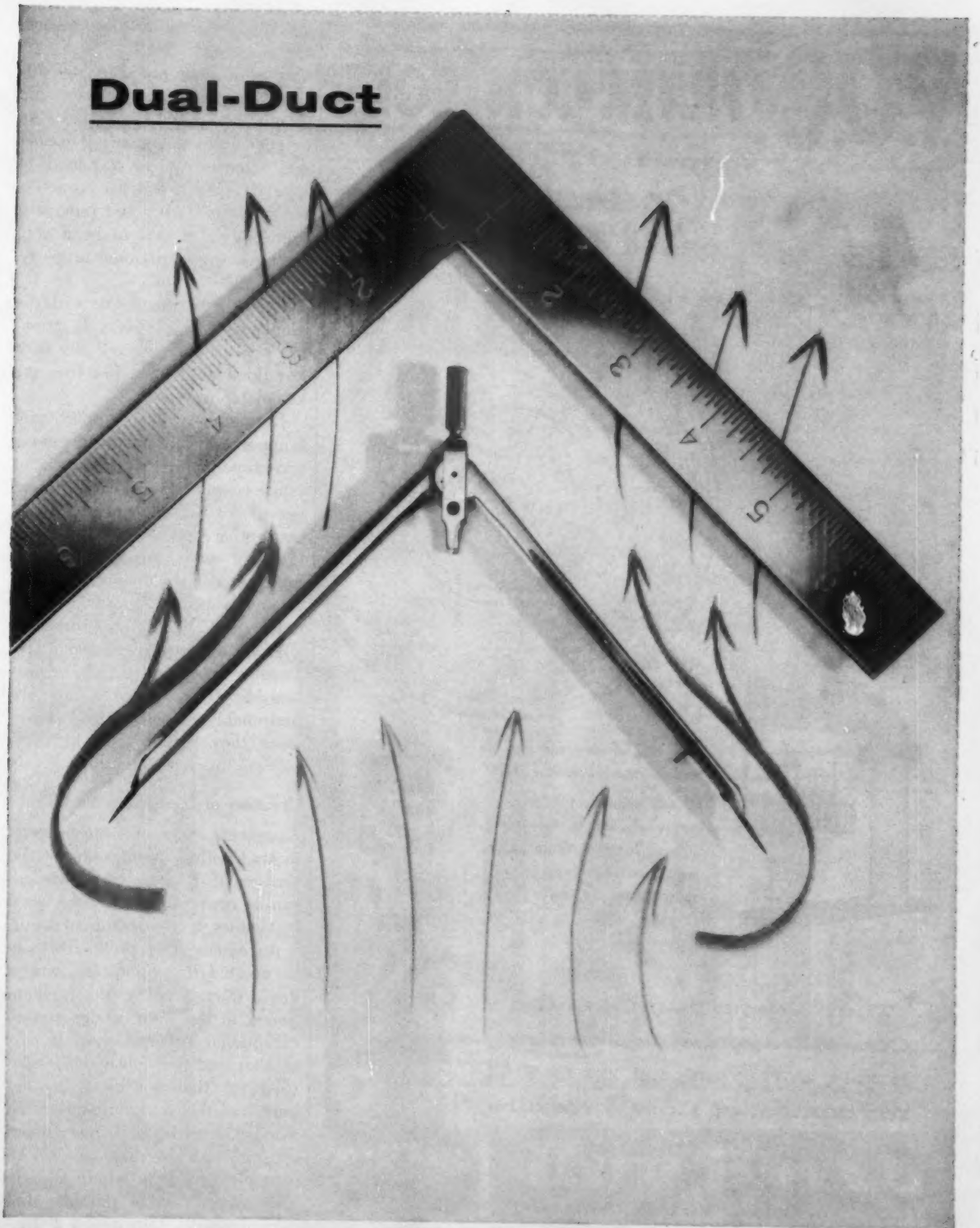
¶ Easements of way—private rights of way, alleys, public highways.

¶ Easements in water rights, such as the right to drain surface water onto your neighbor's land.

¶ Easements of fencing, for example the right of a railroad to fence off its right of way.

Profits

In real property law, a profit (or "profit a' prendre") is a right to remove soil or products or contents of the soil from the land of another. For example, it may be a right to take minerals or to remove timber growing on the land. The rules governing profits are es-



PLICITY
conditioning DESIGN

sentially the same as those regarding easements.

It is always necessary to distinguish a profit from ownership of minerals below the surface. An agreement to cut growing timber and remove it over a period of time is a profit. But a contract to cut growing timber and remove it immediately is said to be a contract relating to personal property, rather than a profit.

Profits appurtenant pass with the dominate estate. "Profits in gross" are personal, i.e., do not run with any dominant estate, but they are assignable to others.

Normally, a profit appurtenant is apportioned automatically among several persons when the dominant estate is split. But where the manner of creation of the profit indicates otherwise (where the apportionment would place a great or unexpected burden on the servient estate) a profit appurtenant will not be held to be apportionable.

Profits in gross, if exclusive, presumably are intended to be apportionable. If nonexclusive, they are presumably not apportionable, since they would tend to overburden the servient estate.

Creation of Easements and Profit

Easements and profits are interests in land within the meaning of the Statute of Frauds, and therefore can be conveyed only by the usual formalities, that is, by formal deeds.

An easement or profit also may be created by implication from a deed, though not expressly mentioned in the deed, under certain exceptional circumstances. If part of the land previously had been used for the benefit of another part, and this is apparent from an inspection of the land, there arises an easement by implication. An example would be where a pathway across part of the land has been used to gain access to another part of the land, and the pathway is reasonably necessary for the use and enjoyment of the portion of the land now being sold.

Furthermore, even if there was no prior use of one part of the land for the benefit of another, if part of the land is sold, an easement arises by implication from the deed, where such an easement is strictly necessary to the use of the land purchased. Such an easement is called an easement of necessity. (It never must be assumed, however, that there is any general principle that just because I need something you have, I have a right to it.) There is simply an implication, from the deed acquired by the purchaser, that there was an intention to write such an easement into the deed, but that it was overlooked by mistake.

Easements and profits also may arise by "prescription," in a manner analogous to acquiring title to realty by adverse possession. The only difference is that adverse use for the statutory period is required, instead of adverse possession.

Extinguishment Methods

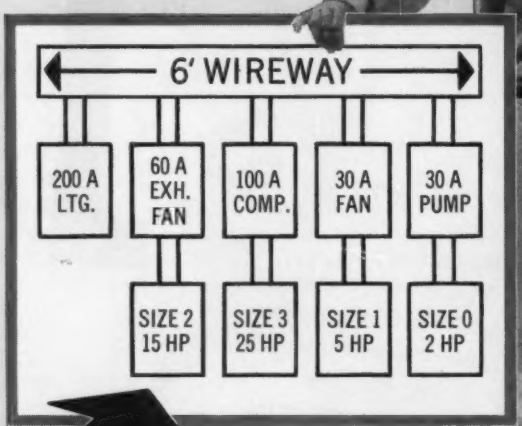
An easement or profit is extinguished by "unity of title," i.e., when the owner of the easement or profit and the owner of the servient estate are the same, and the two interests are such as to be completely merged. For example, if an easement runs longer than the possessory estate, the easement is only suspended during the period of the possessory estate.

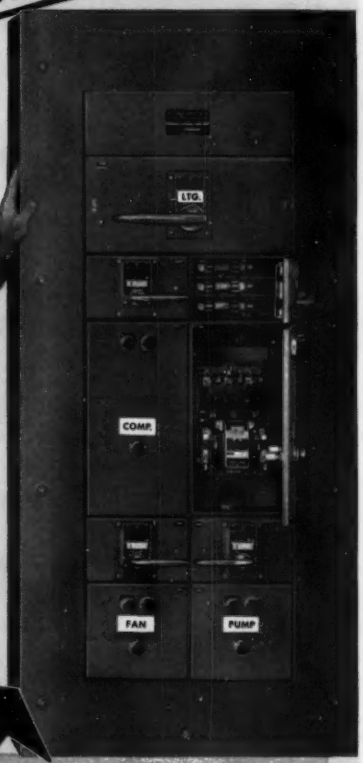
An easement or profit also may terminate by the occurrence of an event which was to mark its termination. To illustrate, an easement of necessity ends when the necessity ends, or an easement ends when it was provided in the grant that it would end.

An easement or profit also may be extinguished by estoppel of the owner of the easement (because of detrimental reliance on his statement of intention to abandon it), by actual abandonment (meaning nonuse plus intention to abandon the easement or profit), by prescription, or by destruction of the servient estate. ▲▲

STARTERS IN QMB PANELBOARDS!

ANOTHER SQUARE D FIRST!

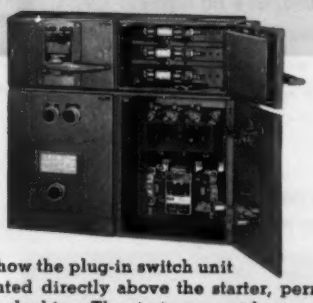




IT TAKES
41 HOURS AND 6 FEET
OF WALL SPACE TO INSTALL AND WIRE SWITCHES AND STARTERS LIKE THIS

IT TAKES
12 HOURS AND 30 INCHES
OF WALL SPACE FOR THE SAME INSTALLATION WITH A QMB STARTER PANELBOARD

Why mount separate starters and disconnect switches? It costs extra money. It wastes space. It takes a lot more time. QMB Starter Panelboards give you a *safer* installation because you can't open a starter when the switch is ON. They give you a much *better looking* job. Since they can even be *flush* mounted, they offer a lot more installation *flexibility*. QMB panelboards accommodate reversing and non-reversing starters, sizes 0 through 3. QMB switchboards and unit substations handle sizes 0 through 5. All of them are available, factory-assembled and wired. Or get enclosures, starters and plug-in switch units from your Square D distributor for on-the-job assembly.



Notice how the plug-in switch unit is mounted directly above the starter, permitting interlocking. The starter cannot be opened when the switch is in the "ON" position.

It's easy to order these starter and switch units. See Page 57 in your Square D Digest and order from your distributor.

EC&M HEAVY INDUSTRY ELECTRICAL EQUIPMENT...NOW A PART OF THE SQUARE D LINE

SQUARE D COMPANY

FREE

These Bulletins on *Marlo* Air Conditioning and Heat Transfer Equipment

Practical... Helpful... Complete
Technical Information

Steam Coils	Bulletin 10
Evntemp Steam Distributing Coils	Bulletin M-10
Cooling Coils	Bulletin 11
Commercial Coils	Bulletin 12
Duct Coils	Bulletin 14
Unit Coolers	Bulletin 21
Low Temperature Electric Defrost	Bulletin 22
Air Conditioning Units	Bulletin 30
Multi-Zone Units	Bulletin 31
Room Units	Bulletin 33
Heating and Ventilating Units	Bulletin 35
Spray Dehumidifiers	Bulletin 38
Industrial Coolers	Bulletin 40
Evaporative Condensers	Bulletin 50
Air Cooled Condensers	Bulletin 55
Cooling Towers	Bulletin 60
Thrifti Towers	Bulletin 61

Circle the Bulletins You Desire and Send Coupon Today

Marlo coil co.

SAINT LOUIS 11, MISSOURI

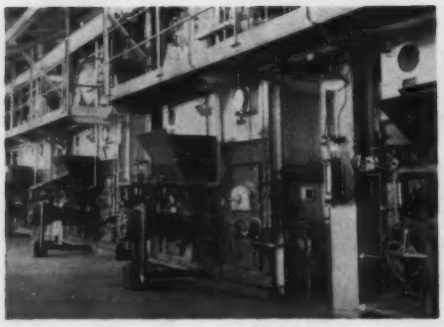
Quality Air Conditioning and Heat Transfer Equipment since 1925

Marlo COIL COMPANY
7100 S. Grand Blvd.
St. Louis 11, Mo.

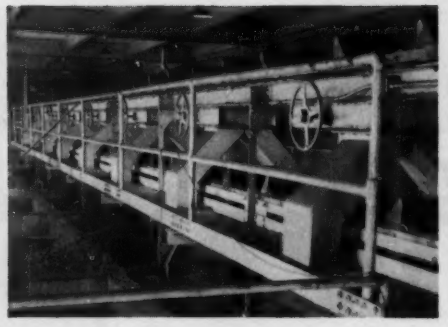
Please send me a copy of the Bulletin(s) circled below:

10 M-10 11 12 14 21 22 30
31 33 35 38 40 50 55 60 61

Name_____
Company_____
Address_____
City_____ Zone____ State_____



View of boiler room at State University. Boilers are 300 hp units, made by E. Keeler Co., and fired by Flynn and Emrich Single Retort Stokers. Average steam load currently is 9,000 lb/hr, requiring only one boiler most of the time.



The SY-CO Corp. V-bucket conveyor-elevator and 250-ton coal bunker storage area. Coal is delivered by truck to hopper, then moves by elevator to bunker. By the use of gates, coal may be channeled to any part of bunker.

This attractive power plant combines modern design with capacity sufficient to allow for expansion of campus facilities.

Heard Around Headquarters

FOUR YEARS AGO a small group of New Jersey engineers working on their own time found that a railroad bridge about 2000-ft long across the Navesink River was in such bad shape that the combination of a good wind storm and "other loads" could cause the bridge to overturn. These engineers, members of the Monmouth-Ocean (New Jersey) Society of Professional Engineers, compiled photographs and other indisputable evidence of their findings. The committee was headed by Eric A. Black, retired consulting engineer.

Mindful of their oaths of public service, the engineers then submitted their findings to the proper government agencies, who referred them to equally proper government agencies, who referred them to equally proper . . .

Last month, the engineers still were trying. They voted unanimously to give a copy of the report to the Eatontown Chamber of Commerce, at the request of this group's president, Col. Carl F. Wihtol.

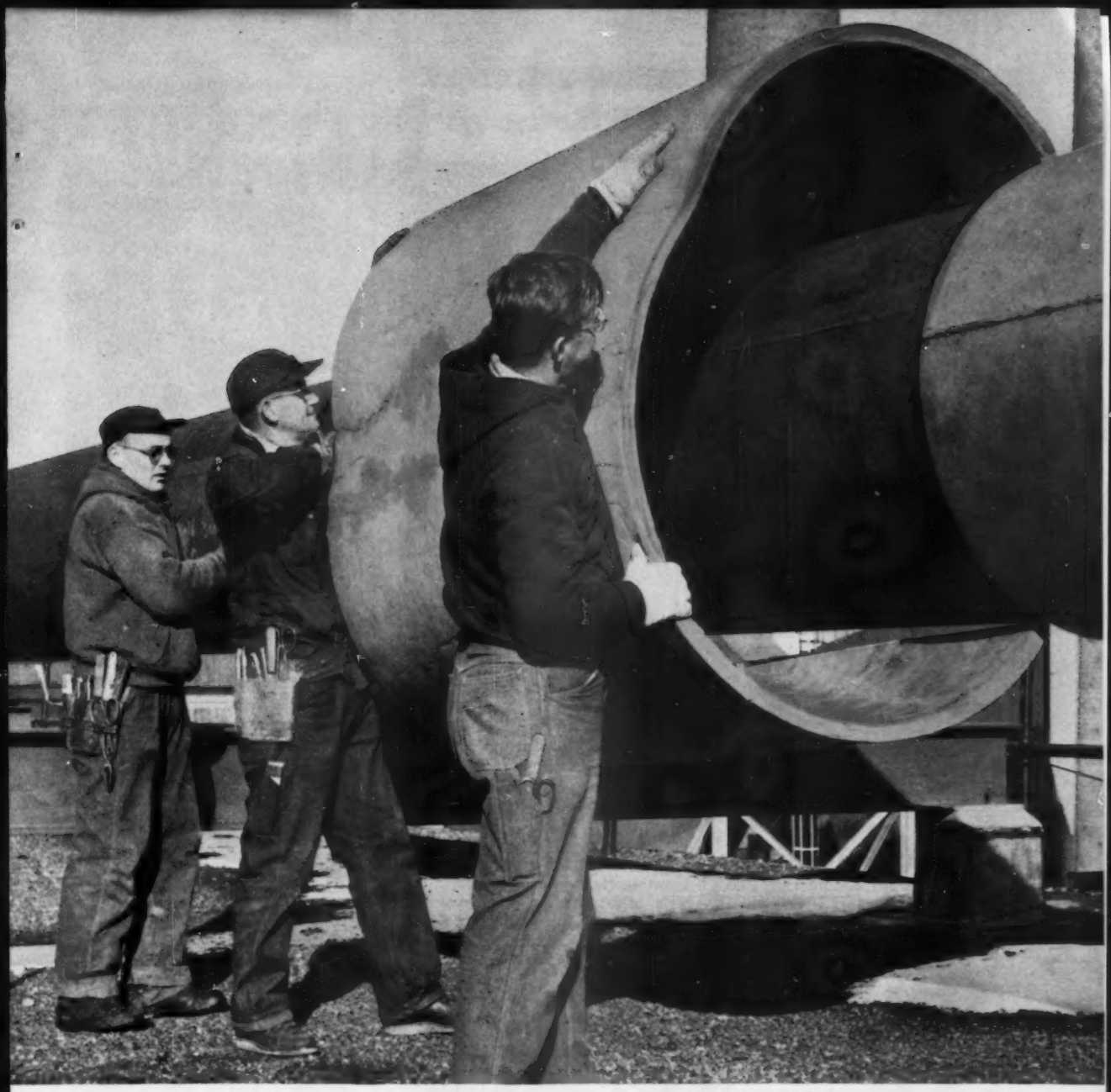
Since the engineers discovered the dangerous condition of the bridge, business has continued as usual on the railroad. "Freights with explosives and 16-coach racetrack trains speeding over the bridge presented a frightening danger, not only to the traveling public but also to the people living nearby," the report points out.

The seriousness of the situation also was pointed out tragically a short time ago. In September, a commuter train on its way to New York City went off an open bridge into Newark Bay, carrying about 45 persons (including Consulting Engineer Joseph Di Stasio) to their deaths. Di Stasio's son is a member of the chapter of NJSPE that compiled this report. And the late Joseph Di Stasio had applied to have his NSPE membership transferred to his son's chapter.

"Surely, when we travel to and from work with a sense of danger, when there is fear that a neighborhood may be wiped out overnight, there is also a grave emergency requiring urgent and effective remedial action. The Society has refrained from defining the action required. It should remain the undivided responsibility of our elected representatives, and of the competent governmental agencies."

Just which "competent governmental agencies" the report means is a little vague, in view of the circumstances. Following is a chronological list of the places the engineers told their story:

"Submission of our findings to the Monmouth County Board of



They compared "K" factors and cost factors . . . and bought SNAP*ON®

Compare costs of insulating big pipe, for example — and you'll agree that there is *nothing* like Snap*On, the original one-piece pipe insulation molded of fine glass fibers. Snap*On sections up to 36″ in diameter, plain or jacketed, simply snap on the pipe in less time than it takes to tell. Application couldn't be easier or more economical.

Consider, too, that Snap*On is permanent, yet reusable, and that its thermal efficiency rates with the highest of any general purpose pipe insulation on the market. Better yet, actually compare Snap*On the next time you insulate by asking your G-B Snap*On distributor to make a TEVA (Thermo-Economic Value Analysis) survey of your requirements.

FOR FREE TEVA SURVEY CALL YOUR LOCAL G-B SNAP*ON DISTRIBUTOR LISTED IN THE YELLOW PAGES

GUSTIN-BACON *Manufacturing Co* GUSTIN gb BACON

212 W. 10th St., Kansas City, Mo.

Thermal and acoustical glass fiber insulations • Pipe coverings and fittings
Molded glass fiber pipe insulation

Chosen Freeholders resulted in meetings of the railroad engineers with the chairman of our Public Works Committee . . ."

Next, "It became necessary for an agency with authority and engineering capacity to investigate the safety of the railroad line, not only in our counties, but for its entire length. The New Jersey Public Utility Commission had the authority but in a past hearing was reported to have claimed it had insufficient engineering personnel. The military branch of the Federal government is a big user of the New York & Long Branch Railroad; in a statute which recently was revised it had jurisdiction over the New Jersey tidewaters which most of the larger bridges of the line span.

"On August 16, 1957, we submitted the matter to the U.S. Corps of Engineers, New York District, who in reply referred us to the owners of the bridges involved. We then contacted the Bureau of Navigation of the New Jersey Department of Conservation and Economic Development, which had just resumed jurisdiction of the New Jersey waterways . . . We were told that the regulations for the maintenance and safety of the waterways had not yet been codified, so that the Bureau could not proceed with enforcement measures. We then contacted the Borough of Red Bank because the approach to the Swimming River Bridge crosses over its West Front Street. In this case the Borough can rightfully cause a dangerous condition to be rectified by the owner of the bridge. Instead, Red Bank is applying for elimination of its six railroad grade crossings, which also will require rebuilding of the Swimming River Bridge. The hearing was scheduled to be held before the Public Utilities Commission on October 15.

"It is evident that so far no effective public supervision of safety on the railroads was in effect; otherwise the increased loadings

MOLDED CASE CIRCUIT BREAKERS

I-T-E magnetic trip Type ETI circuit breakers provide readily accessible trip adjustment.

FOR MOTOR APPLICATIONS... ETI BREAKERS INSURE BETTER PROTECTION

Type ETI magnetic trip circuit breakers employ specially designed overload devices to provide pinpoint, instantaneous short-circuit protection. When used in conjunction with motor protective relays, Type ETI molded case circuit breakers represent the ultimate in motor protection.

A new, informative booklet—yours for the asking—explains in detail why Type ETI molded case circuit breakers insure better protection.

As manufacturers of all types of circuit breakers—and the manufacturers of industry's most complete line of molded case breakers—I-T-E offers this booklet as a service to the electrical industry. Small Air Circuit Breaker Division, 19th & Hamilton Sts., Phila. 30, Pa.

WRITE TODAY FOR THIS NEW BOOKLET

Please send me your new booklet **"TYPE ETI MOLDED CASE CIRCUIT BREAKERS FOR MOTOR CIRCUITS"**

Name_____

Company_____

Address_____

City_____ Zone____ State_____

I-T-E CIRCUIT BREAKER COMPANY
PHILADELPHIA, PENNSYLVANIA

throughout the years would have been met by strengthening or rebuilding of the railroad structures. Actually, the inverse happened and these structures deteriorated and weakened as they got older."

What are some of the conditions on the railbridge the engineers are so concerned about?

Four years ago, the engineers found that "the condition of the Swimming River crossing, erected in 1913 at Red Bank, showed serious deterioration, especially of the foundation work at and above the waterline . . . All of the concrete pedestals were badly cracked and subsided, together with the superstructure. The deeply imbedded anchor bolts remained in place, leaving a gap between the nuts and the base plates, thereby ceasing to function as a safe anchorage for the structure against windstorm, braking, and lateral force. The nuts had spalled off on the underside and in some places were missing entirely; bonding of the anchor bolts to the concrete must have been largely destroyed. Apparently moisture entered into the concrete along the threads of the anchor bolts, exploding the concrete by corrosion or freezing. These conditions could cause overturning of the structure under a combination of strong wind pressure together with other loads . . . The steel superstructure showed the same effects of neglect, with paint flaking off and rust taking over. In members the steel had thinned down and the rivet heads had been partly rusted away . . ."

And there is more.

Corporate Practice Law

In September, the Governor of Massachusetts signed a bill that will permit the practice of engineering by corporations. The bill states that the person or persons in responsible charge, however, must be registered engineers.

The Massachusetts law also subjects anyone who practices engineering without being registered to a fine of $100 to $500, and/or a jail sentence of not more than three months.

IES Studies

Results of exhaustive research on school lighting and on illumination of highways during varying fog conditions will be announced soon by the Illuminuating Engineering Society. The lighting study, which will be a revision of a report issued 10 years ago, is being prepared by IES in cooperation with AIA and the National Council of Schoolhouse Construction. This report is expected to be completed within three months. By December, the Society also plans to release the results of the research on fog lighting conditions.

The Society, in collaboration with the American Standards Association, recently released an extensive new footcandle table, compiled after eight years of study of dif-

SJI publishes NEW steel joist COMBINED SPECIFICATIONS and LOAD TABLES

Combined specifications and load tables for all types of open web steel joists have been published by the Steel Joist Institute, providing a handy reference for the designing architect and engineer. "S" series and "L" series joists uniformly designed are covered in this one over-all standard specification.

While open web steel joists to be manufactured under the new SJI standard will not be available from member companies before January 1, 1959, the combined specifications and load tables have been published at this time to permit incorporation of the new joists into many structures now in the planning stage.

In other new developments, the SJI now offers all SJI-approved "S" series steel joists based upon 20,000 psi working stress, and has increased the number of SJI-approved "S" series steel joist types from 17 to 25.

These improvements by the Steel Joist Institute make SJI-approved "S" series joists a better investment than ever before!

Send coupon for free copy of combined specifications and load tables.

STEEL JOIST INSTITUTE

RM. 715, 1346 CONNECTICUT AVE., N. W. • WASHINGTON 6, D. C.

AMERICAN BRIDGE DIVISION
United States Steel Corporation
ARBUTUS STEEL COMPANY
BETHLEHEM STEEL COMPANY
BUILDERS STRUCTURAL STEEL CORPORATION
CECO STEEL PRODUCTS CORPORATION
COLORADO BUILDERS SUPPLY COMPANY
CONCRETE STEEL COMPANY
JOHN W. HANCOCK JR., INCORPORATED
LACLEDE STEEL COMPANY
MACOMBER INCORPORATED
REPUBLIC STEEL CORPORATION
Truscon Division
ROBBERSON STEEL COMPANY
JOSEPH T. RYERSON & SON, INC.
SHEFFIELD DIVISION
Armco Steel Corporation
SOUTHWEST STEEL PRODUCTS
VIRGINIA STEEL COMPANY

STEEL JOIST INSTITUTE
Rm. 715, 1346 Connecticut Ave., N.W.
Washington 6, D. C.

Please send me a copy of your new Standard Specifications and Load Tables.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

ferent lighting conditions. C. L. Crouch, technical director of the Illuminating Society, said the new light-measuring system appears to be the most scientifically accurate so far developed.

Plan New Society

Initial meeting for the formation of an Association of Consulting Soils and Foundation Engineers was held during the ASCE annual convention in New York last month.

David M. Greer, of Greer Engineering Associates Inc., Montclair, N. J., explained that "the need for this organization is acute. Many state highway departments and some government agencies purchase soils engineering reports on a competitive bid basis. Testing laboratories, and other semiprofessional and subprofessional organizations, are offering what purports to be soils engineering services, but which is really subprofessional work, ranging in quality from fair to abominable."

In addition to Greer, other members of the organizing committee were J. F. Brennan and Gardner M. Reynolds, of Dames and Moore, and Joseph S. Ward, Consulting Soils Engineer of Caldwell, N. J.

Among committee aims are:

¶ Put pressure on various governing bodies to eliminate the growing tendency toward calling for bids on soils engineering.

¶ Engage in promotional work to convince architects and structural engineers of their need for professional soils engineering service.

¶ Gain the cooperation of other engineering societies in an effort to get their membership to treat soils engineering as a profession.

¶ Establish and publish minimum standards for professional work in the soils engineering field.

Unity Through EJC

Unity came up for another round of discussion at a recent Engineers Joint Council board meeting. Four out of five of the Founder Societies approved "Unity through EJC."

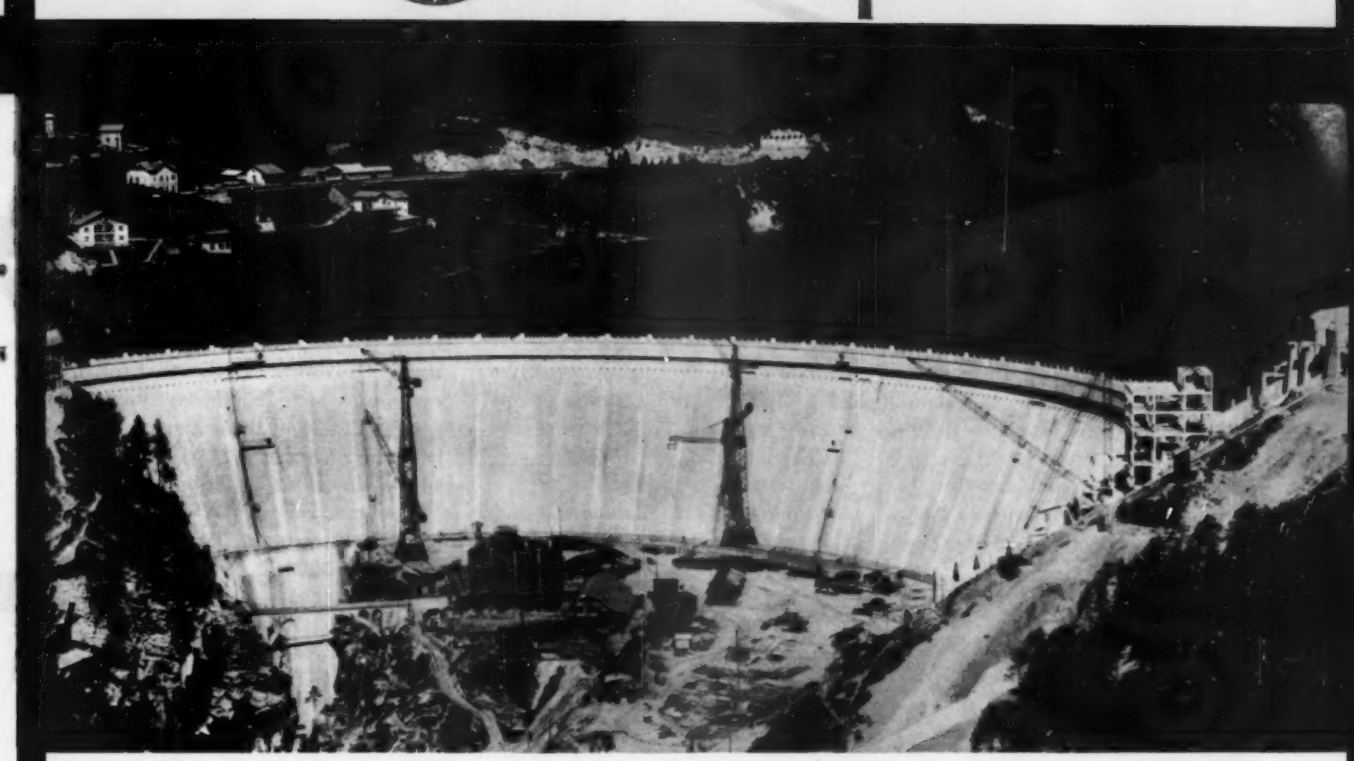
The silent society was AIEE, proponent of the much-discussed Functional Plan. Going on record in favor of EJC as the unifying body were ASME, AIME, AIChE and ASCE. AIME also suggested NSPE be encouraged to join the "consolidated group."

These findings were "accepted for information" by EJC, and now it is the societies' turn to do something about it.

N.J. Consultants Meet

The New Jersey Association of Consulting Engineers announced at the first meeting this year that it has been incorporated. Harry Terry, Edward J. Adamec, John G. Reutter, Rudolph L. Hoerig, and Lewis S. Harvey are trustees for the first year. Principal office of the group is 45 Tindall Road, Middletown, N. J.

A joint committee of the Association and NJSPE has met, with



Italy Dam of Pieve di Cadore, Province of Belluno **1948-1948**

Arch gravity dam Max. height: 112 meters Length of crest: 410 meters Span: 308 meters

Concrete—494,000 cubic yards. A ferro-pozzolanic cement was used consisting of 75% portland cement and 25% pozzolana. The core concrete contained 338 pounds of cement per cubic yard. The face concrete on the water side contained 424 pounds of cement per cubic yard. Plastiment was added in the proportion of 1% by weight of cement throughout.

OTHER DAM PROJECTS

Venezuela Dam on River Caroni **1956-1959**

Gravity type dam Height: 30 meters Length: 180 meters

Concrete — 262,000 cubic yards with 4 fluid ounces of Plastiment liquid per bag of cement.

Austria Limberg Dam—Kaprun Project 1948-1951

Arch dam Height: 120 meters Length of crest: 350 meters Breadth of crest: 6 meters Breadth of toe: 40 meters

Concrete — 590,000 cubic yards. Mix contained 440 pounds of cement per cubic yard and 1 pound of Plastiment powder per bag of cement. Twenty-eight day compressive strength averaged 4250 psi.

Italy Dam in Val Gallina **1949-1951**

Arch dam Max. height: 92 meters Length of crest: 228 meters Span: 190 meters

Concrete — Mix contained 280 pounds of cement and 140 pounds of fly ash per cubic yard. Plastiment was used to assure good workability and specified compressive strength.

Austria Dam of Salza **1947-1948**

Arch dam Height: 50 meters Length of crest: 120 meters

Concrete — 36,600 cubic yards. Mix contained 458 pounds of cement per cubic yard and Plastiment. Plastiment was used throughout the later stages of construction to assure reaching specified compressive strengths.

Switzerland Dam of Lucendro, St. Gothard **1943-1947**

Buttress dam Height: 70 meters Length of crest: 270 meters

Concrete — 200,000 cubic yards. Face concrete on water side and crest concrete contained 458 pounds of cement per cubic yard and Plastiment powder 1% by weight of cement.

Switzerland Dam of Sella, St. Gothard 1943-1947

Gravity dam Height: 36 meters Length of crest: 300 meters

Concrete — 98,000 cubic yards. Face concrete on the water side contained 458 pounds of cement per cubic yard and 1% Plastiment powder by weight of cement.

Algeria Dam of Beni-Bahdel **1936-1937**

Multiple arched dam Height: Max. 57 meters Length of crest over arch: 220 meters

Concrete — Mix contained 508 pounds of cement per cubic yard and 1% Plastiment powder by weight of cement. Plastiment was added to improve strength and workability.

Improve Your Concrete Dam Construction with SIKA PRODUCTS

Mass Concrete – Plastiment Concrete Densifier

The improved placeability of low slump lean mixes is particularly noticeable with the addition of Plastiment. Compressive strengths are increased 15 to 25% making possible the most efficient use of portland cement. The initial set is retarded and rate of internal heat development is slowed down considerably.

Face Concrete – Plastiment Concrete Densifier

Density is increased and absorption reduced in the richer mixes for face concrete. The ready compaction of low slump concrete and reduced drying shrinkage result in a surface of superior quality.

Power Plants – Plastiment Concrete Densifier

Plastiment is equally effective in the structural concrete made with smaller aggregate and higher cement content. Reduced shrinkage, increased strength, higher bond to reinforcing, and better surface finish are a few of the many advantages.

Flumes – Igas Joint Sealer

Joints in concrete flumes and powerhouse structures are flexible and watertight when sealed at the exposed surface with Igas, non-meltable mastic joint sealer.

Tunnels – Quicksetting Sika No. 2, Sika No. 4A, and Sigunit

Leakage, which is usually encountered during tunnel construction, is sealed quickly and economically with the 15 second set of Sika No. 2 mortar or slightly slower set of Sika No. 4A mortar. Sigunit is used to accelerate the set of air placed mortar so that seepage can be sealed and heavy patches built-up without delay.

Sika service and products are available around the world, wherever your project may be.

SIKA CHEMICAL CORPORATION

PASSAIC, NEW JERSEY

District Offices: Atlanta • Boston • Chicago • Dallas • Detroit • New Orleans • Philadelphia • Pittsburgh • Salt Lake City — Dealers in Principal Cities.

Affiliate Manufacturing Companies: ARGENTINA • AUSTRIA • BRAZIL • CHILE • COLOMBIA • CUBA ENGLAND • FRANCE • GERMANY • ITALY • JAPAN • SPAIN • SWEDEN • SWITZERLAND

Ad 26-21

the Association offering its assistance on such common fields of interest as fees and contracts, legislation, and public relations.

A proposed booklet, for the use of engineers serving architects, was submitted to the Consulting Engineers Council by Terry. He pointed out that the CEC brochure, recently published, promotes consulting engineers rather than the Council, and is devoted primarily to heavy structures, power plants, and engineering contracts with owners. Terry's brochure was scheduled for consideration at the CEC executive board meeting last month.

EJC-ECPD Merger?

Morris Hooven, retiring president of ECPD, suggested at the recent annual meeting in St. Louis that ECPD and EJC get together, and "legitimatize a kind of common-law marriage." He pointed out that the two have worked in cooperation for years, and "the climate of opinion at the moment seems to anticipate immediate merger of EJC and ECPD."

Personally, he cautioned against acting hastily. But he referred to suggestions four years ago that the two groups have a joint secretary, "emphasizing that the autonomy of the two groups is to be continued but that co-ordination of operational functions was desired."

No joint secretary has been retained. And the suggestion that the presidents of each Council attend executive committee meetings of the other has been carried out only because of cross-representation.

Hooven also favored admission of three groups which have been trying for some time to become ECPD members– the National Society of Professional Engineers, the Institute of Radio Engineers, and the Institute of Aeronautical Sciences. "Then, if the three applicants were admitted to ECPD and if EJC would offer to become an allied body, we could have immediately an organizational unity which would solidify our present operational unity in the field of education," Hooven concluded.

CEC Asks EJC Membership

The Consulting Engineers Council, which requested membership in EJC and then asked that the request be delayed until internal problems could be worked out, evidently has solved the pending problems. EJC has received a new CEC membership application.

With the acceptance of the South Carolina Society of Engineers as an affiliate member, EJC now has 20 organizations which are constituent, associated, or affiliate members.

Registration Problem

Recently, a South Carolina resident applied for registration in his home state. While this was pending, he also applied in a northern state.

He failed the examination in his home state, but the registration al-

ready had been granted in the northern state.

And the National Council of State Boards of Engineering Examiners, at a recent convention in Milwaukee, reaffirmed its determination to "question the procedure of registering applicants from other states who are not registered in their home state or where employed, without investigating the reasons."

Reidy in New Post

Peter J. Reidy, president of Purdy & Henderson Associates Inc., and president of the New York Association of Consulting Engineers, was named Commissioner of the Department of Buildings in New York City last month.

Reidy immediately resigned his position with Purdy & Henderson (Wallace H. Heidtmann is his successor), and then resigned as Association president at the executive committee meeting on October 8. A new Association president will be installed at the December meeting, according to custom.

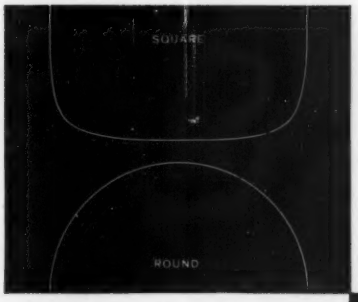
When Reidy accepted the $22,500 a year job, Mayor Robert F. Wagner pointed out that "Mr. Reidy is accepting the position at substantial personal sacrifice, but he believes with me, that it is a duty to perform a public service of this sort."

PETER J. REIDY

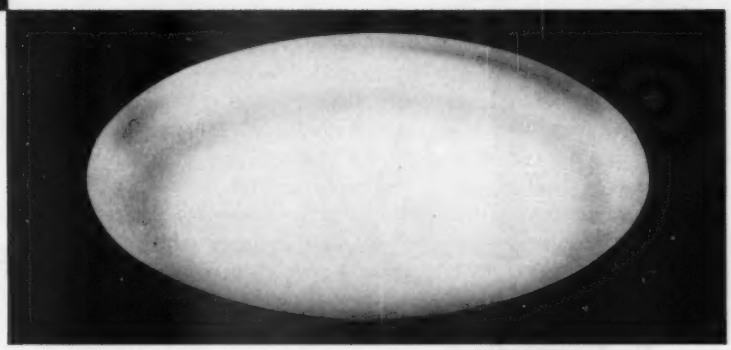
In accepting the position of Buildings Commissioner, Reidy is tackling a difficult job. However, he is familiar with the problems. He was a member of the mayor's 10-man Committee on Practices and Procedures in the Department of Buildings.

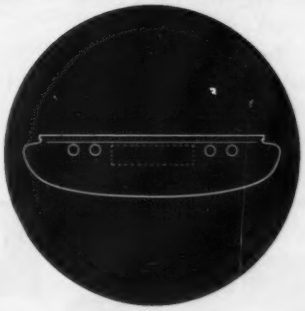
As a New York paper pointed out, "He will take on a traditionally troublesome department in which, periodically there are investigations of shakedowns and bribery in the relations between the permit-granting agency and contractors and landlords." The last commissioner stated, on a radio show, that graft could exist without the knowledge of the Commissioner.

Reidy's new department is charged with safeguarding the housing and working conditions of New York City's 8-million inhabitants in almost 800,000 structures. The Commissioner oversees the planning, construction, maintenance, and occupancy of buildings of all kinds. He will have a total



sculpture in light





CIRCULITE is a rare development in architectural lighting...a completely new full-diffusing light form with a sculptured look. Surface-mounted 24" softened square and round units look almost built-in. They feature a specially regressed housing so the eye sees only a smooth luminous surface at most viewing angles. Light stabilized styrene diffusers are completely frameless, swing down on hidden hinges for easy maintenance. Takes two Rapid Start Circline lamps. A refreshing and exciting treatment for restaurants, lobbies, stairhalls, reception areas, corridors and retail shops. For a 120-PAGE CATALOG-BINDER fully detailing Lightolier's wide range of architectural lighting, write Dept. CE-118.

LIGHTOLIER

ARCHITECTURAL LIGHTING • RESIDENTIAL FIXTURES • PORTABLE LAMPS
MAIN OFFICE AND FACTORY: JERSEY CITY 5, NEW JERSEY

See all the newest Lightolier designs at these authorized distributors:

ALABAMA
Birmingham: Mayer Elec. Sup. Co.
ARIZONA
Phoenix: Brown Wholesale Elec.
CALIFORNIA
San Francisco: California Elec. Sup. Co.
COLORADO
Denver: Central Elec. Sup.
CONNECTICUT
Bridgeport: S. M. Tower
Hartford: Beacon Light & Sup. Co.
New Haven: Grand Light & Sup. Co.
New London: United Elec. Sup. Co.
Stamford: Marie Co.
DISTRICT OF COLUMBIA
Maurice Elec. Sup. Co.
National Elec. Wholesalers
O. R. Evans & Bros.
FLORIDA
Miami: Farrey's Whsle. Hdwe. Co.
GEORGIA
Atlanta: Atlanta Ltg. Fix.
Noland Co.
ILLINOIS
Chicago: Efengee Elec. Sup. Co.
Englewood Elec. Sup. Co.
Hawkins Electric
Hyland Elec. Sup. Co.
Wholesale Elec. Sup.
Elgin: Fox Elec. Sup.
Rockford: Englewood Elec. Sup. Co.
Springfield: Springfield Elec. Sup.
INDIANA
Ft. Wayne: Mossman-Yarnelle Co.
Gary: Englewood Elec. Sup. Co.
So. Bend: Englewood Elec. Sup. Co.
IOWA
Des Moines: Weston Lighting Co.
KANSAS
Kansas City: W. T. Foley Elec. Co.
KENTUCKY
Paducah: Ohio Valley Sup.
LOUISIANA
Baton Rouge: Electrical Wholesalers
New Orleans: Interstate Elec. Co.
MAINE
Bangor: Standard Elec. Co.
Portland: Holmes Elec. Supply Co.
MARYLAND
Baltimore: Excello Public Serv. Corp.
MASSACHUSETTS
Boston: Mass. Gas & Elec. Light Co.
Henry L. Wolfers Inc.
Fitchburg: Service Elec. Sup. Co.
Pittsfield: Carr Supply
Springfield: Eastern Elec. Sup.
Worcester: Atlantic Elec. Sup.
Benjamin Elec. Sup.
MICHIGAN
Detroit: Madison Elec. Co.
Michigan Chandelier Co.
Flint: Royalite Co.
Grand Rapids: Purchase Elec. Sup. Co.
Pontiac: Standard Elec. Co.
Saginaw: Standard Elec.
MINNESOTA
Duluth: Northern Elec. Sup. Co.
Minneapolis: Charles A. Andersen & Co.
Northland Elec. Sup. Co.
St. Paul: Lax Elec. Co.
MISSOURI
St. Louis: M. K. Clark
NEBRASKA
Omaha: Electric Fix. & Sup. Co.
NEVADA
Reno: Western Elec. Dists. Co.
NEW HAMPSHIRE
Portsmouth: Mass. Gas & Elec. Light Co.
NEW JERSEY
Atlantic City: Franklin Elec. Sup. Co.
Camden: Camden Elec. Fix. Co.
NEW MEXICO
Albuquerque: Albuquerque Dist. Co.
NEW YORK
Albany: Havens Elec. Co. Inc
Binghamton: Freije Elec. Sup. Co.
Buffalo: Buffalo Incan. Light Co. Inc.
Niagara Falls: Wysen Sup. Co.
Poughkeepsie: Electra Sup. Co.
Rochester: Rowe Electric Sup. Co.
Syracuse: Superior Elec.
NORTH CAROLINA
Charlotte: Independent Elec. Sup.
Durham: Noland Co.
Greensboro: Elec. Sup. & Equip. Co.
Kinston: Kinston Elec.
Winston-Salem: Noland Co.
OHIO
Akron: The Sacks Elec. Sup. Co.
Canton: The Electric Sales
Cincinnati: B. & B. Elec.
F. D. Lawrence Electric Co.
Cleveland: H. Leff Electric
Columbus: Elgee Elec. Co.
The Loeb Elec. Co.
Dayton: Dustman Elec. Co.
Toledo: Gross Elec.
Youngstown: Mart Industries
OKLAHOMA
Tulsa: Lawson Elec. Co.
PENNSYLVANIA
Allentown: Coleman Elec. Co.
Erie: Kraus Elec. Co.
Harrisburg: Fluorescent Sup. Co.
Hazleton: Power Elec. Co. Inc.
New Castle: Midwestern Elec. Co.
Philadelphia: Ace Lighting Fix. Co.
Gold Seal Elec. Sup. Co.
Sylvan Elec. Fix. Co.
Pittsburgh: Allied Elec. Sup. Co.
Argo-Lite Studios
Doubleday-Hill Elec. Co.
Wally Elec. Sup. Co.
Reading: Coleman Elec. Co.
Scranton: Lewis & Reif
Wilkes-Barre: Anthracite Elec. Sup. Co.
RHODE ISLAND
Pawtucket: Major Elec. Sup. Co.
Providence: Leavitt Colsen Co.
SOUTH CAROLINA
Anderson: Sullivan Hdwe. Co.
Columbia: Capitol Elec. Sup. Co.
Noland Co.
Greenville: Sullivan Hdwe. Co.
SOUTH DAKOTA
Watertown: J. H. Larson Elec. Co.
TENNESSEE
Johnson City: Noland Co
Nashville: Nashville Elec. Sup. Co.
TEXAS
Dallas: Rogers Elec. Sup
Ft. Worth: Andersen Fixture Co.
Houston: Martin Associates
San Antonio: Southern Equip. Co.
VIRGINIA
Arlington: Dominion Elec. Sup. Co. Inc.
Noland Co.
Lynchburg: Mid State Elec. Sup. Inc.
Norfolk: Noland Co.
Roslyn: Noland Co.
WEST VIRGINIA
Charleston: Goldfarb Elec. Sup. Co.
Virginian Electric Inc.
Huntington: West Virginia Elec. Co.
Wheeling: The Front Co.
WISCONSIN
Appleton: Rice Northern Co.
Eau Claire: W. H. Hobbs Sup. Co.
La Crosse: W. A. Roosevelt Co.
Milwaukee: Lappin Elec. Co.
Standard Elec. Sup.
WASHINGTON
Seattle: Seattle Lighting Fix. Co.
ALASKA—*Anchorage:* Northern Supply Co.
CANADA
Montreal: The Gray Elec. Co.
Toronto: Revere Elec. Dist.
Toronto Elec. Sup. Co.
HAWAII
Honolulu: Hawaiian Light. & Sup. Co.

personnel of about 1400, including about 650 inspectors and 65 engineers, in the department.

New Florida Association

In a meeting held in Winter Park on August 12, consulting engineers from Orlando, Tampa, Tallahassee, and Jacksonville voted to establish a Florida Association of Consulting Engineers. Temporary officers are Frederick L. Bell, of Tallahassee, chairman; Robert P. Jaffer, of Tampa, secretary and treasurer. A constitution and by-laws committee was appointed to draw up documents that would permit eventual admission of the new group to the Consulting Engineers Council.

Precedent?

In September, The Anaconda Company announced in the *New York Times* that "the Anaconda Company has decided to make its engineering department available to other companies for planning, designing, engineering, and supervising the construction of major industrial plants of all kinds."

Since New York State is the traditional battleground for corporate practice, and corporate practice has not been allowed except under the Grandfather Clause (firms prior to 1935), it looked like Anaconda might have to build its headquarters across the river in New Jersey.

However, a check with the records in the Secretary of State's office shows that the Anaconda-Jurden Associates Inc. "was qualified to do business" on July 25, 1958.

The request, submitted by Anaconda to the Secretary, stated: "That the business which it proposes to carry on within the State of New York is as follows: To furnish managerial, consulting, and other services and information for the purpose of planning, improving, repairing, and equipping property, plants, and equipment."

The Secretary of State amended the request by striking out two words – "consulting" and "planning," and permitted the new firm to start work.

Proper Approach

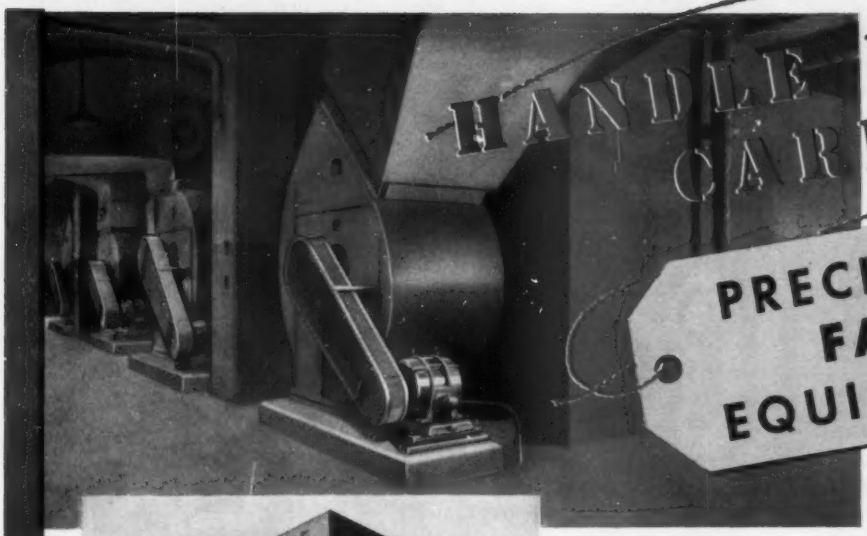
Electrical contractors in eleven western states are seeking to have the "save-all" and "catch-all" clauses eliminated from contracts.

The contractors are willing to accept the clause which states electrical work will be installed in accordance with National Codes and other ordinances, but want to add "except for design." A spokesman explained that the contractors want to give the engineer and the architect responsibility for drawings.

Meeting on Model Law

Possible revision of the model registration law will be discussed at a special meeting to be held by the National Council of State Boards of Engineering Examiners in New York City next February.

Among those invited are the Consulting Engineers Council, the



Battery of Type AP Fans, Sizes 365 to 445, Installed In General Accounting Office, Washington, D. C.

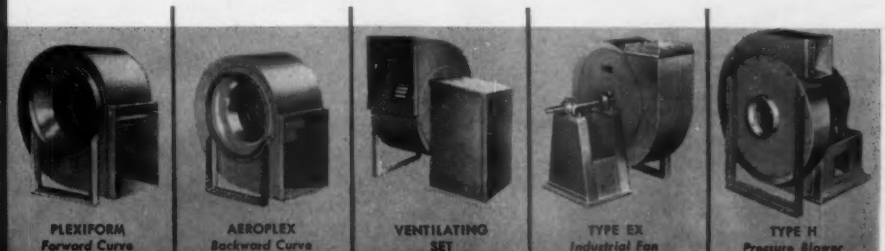
Get the fullest value and benefit from the careful design, features of construction, and balance built into the equipment by the factory . . . When installing Fans, take note of these helpful pointers:

- Bolt fans evenly to a substantial, level foundation. Fastenings should be carefully located to match the base and avoid warping.
- Good vibration isolation, selected to suit operating conditions, reduces noise, protects equipment and building against damage from vibration.
- Inlet and Outlet connections should be carefully aligned to avoid warping fan or ducts. Flexible connections help to offset normal variations in duct alignment, reduce noise transmission.
- Drive auxiliaries should be of highest quality, well balanced and aligned. Check for uniform tension on multiple-belt drives.
- Drive Guards are desirable for safe operation, and should be checked for conformity to applicable construction code.
- Check fit of close running parts, such as fan wheel to cone, sheaves to guards, before starting up. Fit may have been disturbed during erection.
- Check all operating instructions. Be sure all bearings are properly lubricated before running.
- Check for correct rotation. See that motor or prime mover is running correctly before connecting to fan.

"FAN-A-GRAFICS For Equipment Engineers"

— A Complete Guide for Specifying, Buying, and Operating Centrifugal Fans — is available at your request. Write for your copy today!

Bayley



Engineered Air-Handling Equipment

See Bayley Exhibit — BOOTH 621

14th International Heating & Air-Conditioning Exposition Jan. 26-29, 1959 Philadelphia Jan. 26-29, 1959

BAYLEY BLOWER COMPANY

6610 W. Burnham Street, Milwaukee 14, Wisconsin

American Institute of Consulting Engineers, the National Society of Professional Engineers, and "everyone else we think might have an interest in the model law," according to William H. Larkin, board president.

The model law originally was passed in 1946 to serve as a guide to states enacting registration laws. Any revisions would be aimed at strengthening weak laws and at promoting registration uniformity.

CEC Actions

The Consulting Engineers Council has adopted two policy statements prepared by its Ethical Practices Committee, under the chairmanship of Joe Williamson, Jr., a St. Louis consulting engineer.

(1) A consulting engineer shall not share fees except with other registered professional engineers or registered architects. It is to be understood, however, that interprofessional practice (for example with architects) on the basis of any recognized ethical contractual basis is approved. In no event shall political contributions, split fees, finder's fees, commissions, kickbacks, or other considerations be paid directly or indirectly in connection with professional work. In soliciting work a consulting engineer shall be represented only by full-time employees not holding political office; furthermore, the consulting engineer shall not take unfair advantage of any political connections in the securing of professional work.

(2) In all unavoidable public and private references made to Errors and Omissions Insurance, it shall be termed Professional Liability Insurance. Furthermore, in the interest of the public and the profession, it shall be declared to be unprofessional and unethical conduct for an engineer to make any statements of any nature whatsoever, publicly or privately, relative to his carriage of Professional Liability Insurance, except where he is obliged to discuss such matters; for example, when actual claims thereunder are involved, or when, at a client's own instigation, discussion of the subject is unavoidable. Such discussion shall then be held to a minimum.

EJC Emblem

From five designs submitted, the Engineers Joint Council has selected this as the organization's official insigne. ▲▲

NOT ONE FIELD CUT

in all This

MIDWEST

Shop-Fabricated Piping

...Under a subcon...
and I would like to say the West Coast Division have on this job complied fully with the high standards of workmanship for which Midwest is known.

Throughout this entire project not once was a cut necessary to correct any piece of fabrication, and I might add in several instances close tolerances had to be met.

The above was not written on an impulse but as construction superintendent, this means but one thing: fast and low cost erection. Would appreciate your thanking Midwest personally for ...om a construction

Excerpt from letter by:
HOLMES & NARVER • Engineers-Constructors
828 South Figueroa St. • Los Angeles 17

Note particularly the words "*fast and low cost erection*" in the above letter. They characterize Midwest Shop-Fabricated Piping . . . whether for refinery, power plant or industrial installations. In this instance they were written by A. H. Chamberlain, construction superintendent, upon completing the installation of a Houdriformer Unit at the U.S. Oil & Refining Co., Tacoma, Washington.

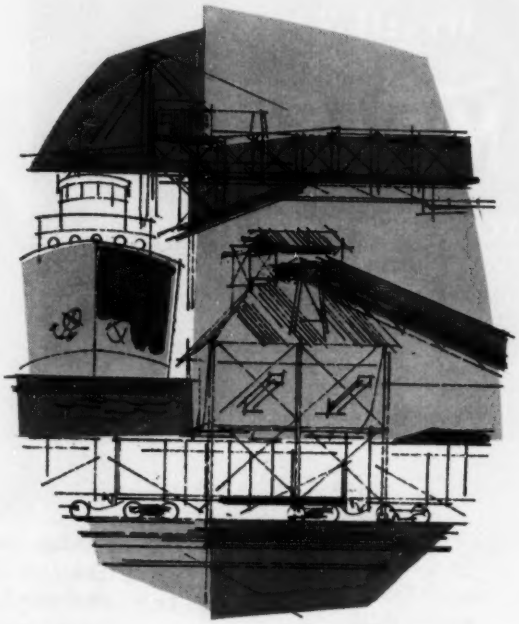
There are three well-equipped Midwest pipe fabricating shops located to serve economically all sections of the country. Each is staffed by a highly skilled organization using the latest techniques. Each has wide experience on all kinds of projects so that the possibilities and limitations of all piping materials are well understood. You too will find it to your advantage to call in Midwest whenever you need fabricated piping.

MIDWEST PIPING COMPANY, INC.
Main Office: St. Louis 3, Missouri (P.O. Box 4432)
Plants: St. Louis, Clifton, N.J. and Los Angeles

SALES OFFICES:
ASHEVILLE (BOX 446, SKYLAND, N. C.) • ATLANTA 972 11TH. ST.
BOSTON 27—426 FIRST ST. • CHICAGO 3—79 WEST MONROE ST.
CLEVELAND 14—616 ST. CLAIR AVE. • HOUSTON 2—1213 CAPITOL AVE.
LOS ANGELES 33—520 ANDERSON ST. • MIAMI 34—2103 LE JEUNE RD.
NEW YORK 7—50 CHURCH ST. • PITTSBURGH 19, PA.—437 GRANT ST.
ST. LOUIS 4—1460 S. SECOND ST. • SAN FRANCISCO 11—420 MARKET ST.
TULSA—1640 E. 21ST. ST.

8033

MATERIAL HANDLING ENGINEERING WITH A *Creative Twist*



An unloading, hoisting, storage, and distribution plant for an open hearth mill in a midwestern steel plant.

Finding the right solution to a difficult material handling problem is a design and engineering job—but with a creative twist. It requires the ability of the consulting engineer to combine imagination with seasoned experience and technical skill.

Roberts & Schaefer welcomes the opportunity to serve consulting engineers on their material handling projects. R&S engineers, working to your exacting design specifications, will build the job to give your clients the performance, flexibility and economy they want.

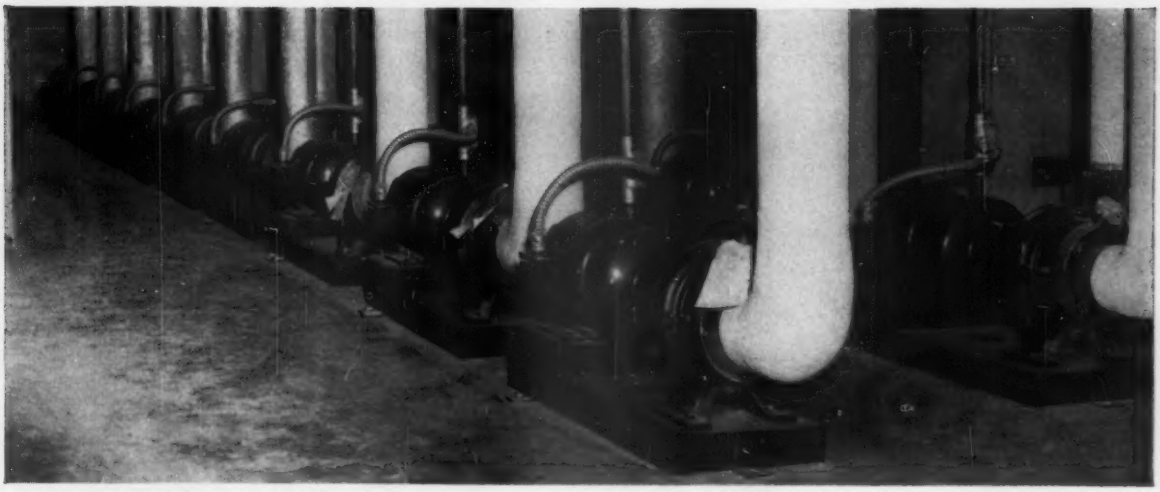
Roberts & Schaefer offers consulting engineers comprehensive facilities for engineering and construction of material handling plants which are complete with all necessary processing, distributing and storage systems.

ENGINEERS & CONTRACTORS

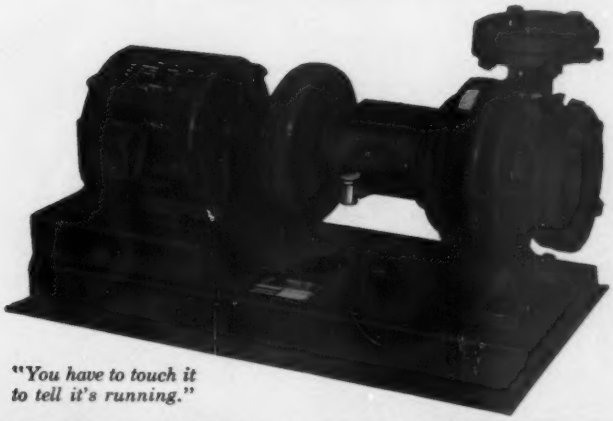
ROBERTS & SCHAEFER *Company*

130 NORTH WELLS STREET, CHICAGO 6, ILLINOIS

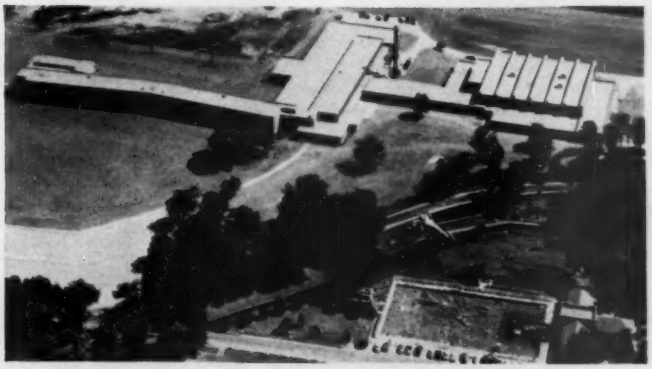
NEW YORK 19, N.Y. • PITTSBURGH 22, PA. • HUNTINGTON 10, W. VA. • ST. PAUL 1, MINN.



EIGHTEEN B&G UNIVERSAL PUMPS DELIVER Quiet HEAT



"You have to touch it to tell it's running."



Parkview High School, Springfield, Mo.

Architect: Richard P. Stahl, Springfield, Mo.
Engineer: R. W. Bare, Springfield, Mo.
Contractor: McCarty Co., Springfield, Mo.

Selecting a pump for a circulated water heating or cooling system is not merely a matter of proper head and capacity. *Quiet, vibrationless operation is of major importance!*

In the modern school shown here, eighteen B&G Universal Pumps deliver heat without distracting noise. These pumps are designed specifically for heating system use...built to perform dependably and *silently*. No vibration eliminators or flexible connections to the piping are needed.

Universal Pump motors, for example, are specially constructed and selected for *extra-quiet* operation. Long *sleeve* bearings are used in both motor and pump—another assurance of smooth, vibrationless operation and long life of both pump and motor. The oversized shaft is made of special alloy steel with an integral, heat-treated thrust collar to absorb end-thrust. Water leakage is prevented by the diamond-hard "Remite" mechanical seal...a B&G development.

Note, too, that *vertical* split case construction with removable bearing frame permits easy servicing without breaking pipe connections or motor leads.

B&G BOOSTER

An in-line pump of smaller capacities than the B&G Universal, but with the same features which assure quiet operation.

BELL & GOSSETT
COMPANY
Dept. FM-70 Morton Grove, Illinois

Reg. U.S. Pat. Off. *Canadian Licensee: S. A. Armstrong Ltd., 1400 O'Connor Drive, Toronto 16, Ontario*

Acme . . . the **practical** approach to air conditioning

RG 3 to 30 tons

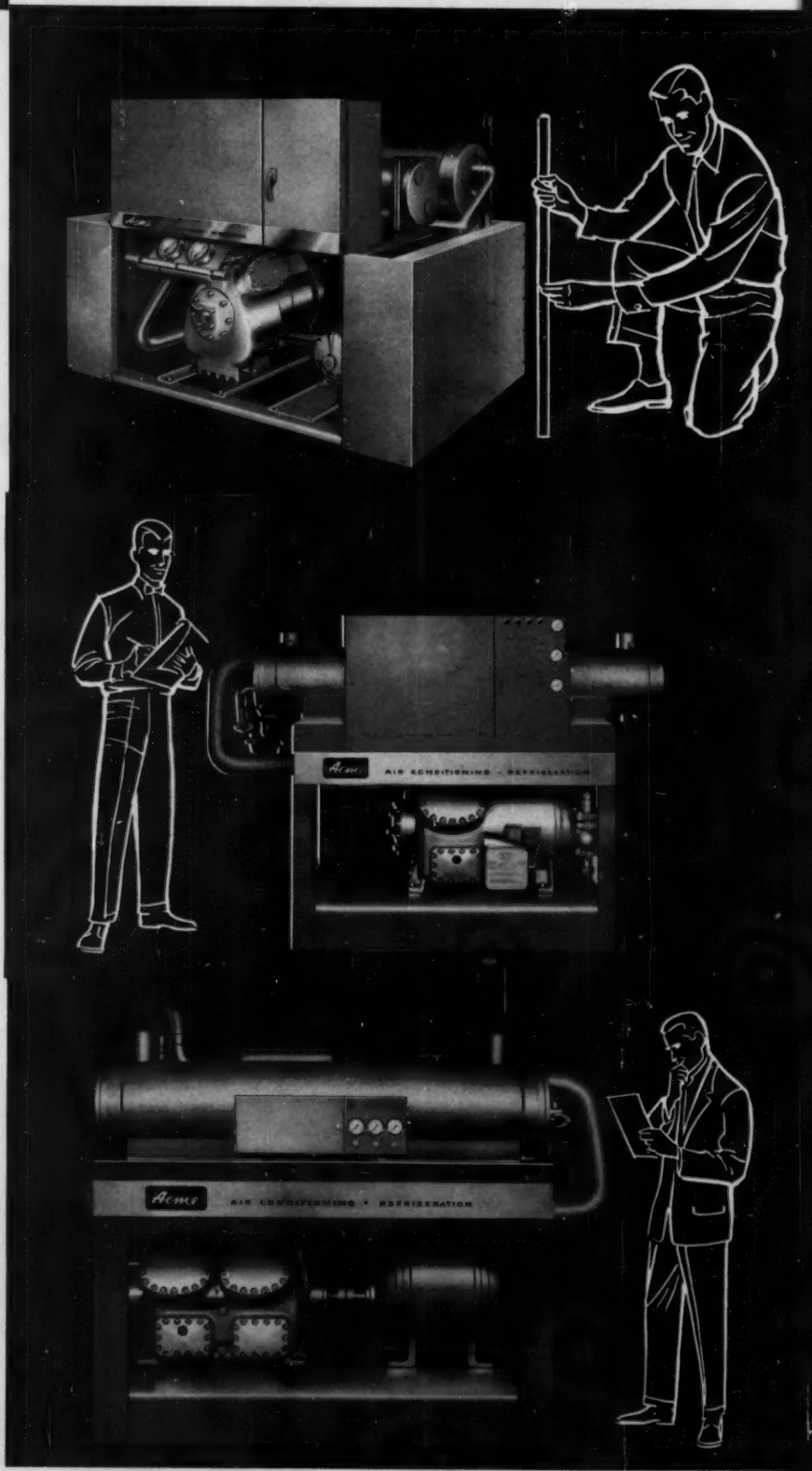
Completely wired and piped unit including controls, circulating pump and operating charge. Hermetic compressor. Extremely quiet in operation. 8 models.

HE 20 to 60 tons

Completely assembled from matched components including all internal wiring and piping, controls and gauges. Hermetic compressor. Operates smoothly and quietly. 6 models.

DE 20 to 125 tons

Factory assembled from matched components, delivered complete with motor coupled to direct drive compressor, controls mounted and wired, and holding charge of refrigerant. Starters optional. Quiet, compact, reliable. 9 models.



A full NEW line of high performance Acme WATER CHILLERS

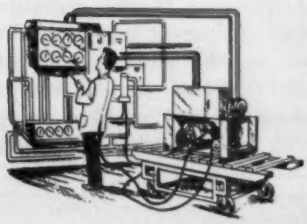
SMALLER • LIGHTER • EASIER TO USE

Here is a completely new line of Acme packaged water chillers, in a full range of sizes, which pack more capacity in less space than ever before. Size has been cut as much as 50%, weight as much as 30%, and costs have been reduced, too. Now you can have the simplicity of a completely factory-assembled packaged unit . . . the rugged reliability for which Acme equipment has always been known . . . and the smooth, quiet performance that you have always wanted—all wrapped up in a smaller, lighter, lower cost package.

These great new Acme packaged water chillers mean that you can save building space . . . cut structural requirements . . . slash installation costs while using top quality Acme equipment.

Complete Acme Systems

In addition to this great new line of packaged water chillers, Acme offers a complete range of water-saving and cooling distribution equipment for both wet and direct expansion systems. Get the full story on the new Acme Packaged Water Chiller line and on other components for a complete Acme system. Call your nearby Acme sales engineer or write directly to the factory.



EVERY UNIT TESTED AND CERTIFIED

Every Acme packaged water chiller is tested under operating conditions before shipment. Performance data is recorded on the most modern testing instruments and every machine carries a certificate guaranteeing that the unit has performed according to specifications.

Acme
INDUSTRIES, INC.
JACKSON, MICHIGAN
Manufacturers of quality air-conditioning and refrigeration equipment since 1919.

Report from the West Coast

RALPH S. TORGERSON
West Coast Editorial Representative

LEGISLATIVE and regulatory problems of interest to all branches of engineering were discussed at the annual meeting of the California Legislative Council of Professional Engineers, in San Francisco, September 20 and 21.

Included in the Council's membership are delegates representing AIChE, AIEE, ASCE, ASME, the Consulting Engineers Association of California, Bay Counties Civil Engineers and Land Surveyors Association, Civil Engineers and Land Surveyors Association of California, County Engineers Association of California, San Diego Council of Engineers and Land Surveyors, Inc., and the Structural Engineers Association of California. Presenting a united front in legislative matters has been helpful in the passage of favorable legislation and in opposing bills that would be harmful to the profession. The Council also has strengthened the hands of the State Registration Board in upholding the high standards of the profession.

Full Agenda

President W. D. Soule opened the meeting, and secretary-treasurer Pecos Calahan read his report. Then George Brandow, ASCE, Los Angeles, reported on engineering degree accreditation being sought by several colleges. Additional laboratory facilities are needed by some of these schools before they can meet the requirements.

Anthony J. Kennedy, counsel, commented on changing political trends. He indicated that there is likely to be a big turnover in state office holders after the coming election. This would complicate relations with these bodies.

H. J. Degenkolb, president of the Structural Engineers Association of California, commented on the advisability of increasing membership of the State Fire Advisory Board to include an engineer and an architect representative. At present the board is made up only of fire chiefs. The change would require a bill authorizing increasing the membership; the Governor would make the appointments. The purpose of the proposed legislation is to place on the board professional men who could advise as to the practicability of new regulations. As it is now, certain regulations have been imposed which were costly and impractical in application, necessitating long negotiations to have them changed. It was voted to support the bill in principle.

Section 131, State Highway Code, now permits the Highway Department to offer consulting services to cities and counties. It was decided that no action be taken as this matter is not within the scope of Council activities. It then was proposed that a parallel Engineering Council be set up which would deal with matters other than legislation. Again no action was taken.

Injunctive Enforcement

Hal Reynolds, counsel of AIA, California chapter, referred to assembly bill AB 726. The feasibility of using the injunctive method of enforcing the Business and Professions Code was discussed, and it was voted to support this amendment to the Act. It was suggested that counsel study the problem and present a proposal at the February meeting.

"Professional Engineers"

The California Society of Designers (Northern California) and the American Institute of Building Designers (Southern California) jointly are spon-

up, UP again!

goes the value of the RLM LABEL on all these lighting units made by these leading manufacturers

YOUR BASIC ASSURANCE OF HIGH QUALITY

This label identifies the RLM-certified lighting equipment of 27 leading manufacturers.

INCANDESCENT RLM SPECIFICATIONS							FLUORESCENT RLM SPECIFICATIONS									
							0-15% UPLIGHT						20-30% UPLIGHT			
#1	#2	#3	#4	#18	#40		D-1	D-1	D-1	D-3	D-3	D-3	SD-1	SD-1	SD-1	
100-1000w Dome	100-1000w Deep Bowl	100-1000w Semi-Angle	500 & 1000w High Bay	200-1000w Glassteel Diffuser	500 & 1000w High Bay *		2-40w 1A-18	2-75w 1D	2-800 ma. 1E	3-40w 2A-28	3-75w 2D	2-800 ma. 2E	2-90 & 40w 2A-38	2-40w 1A-18	2-75w 1D	2-800 ma. 1E
5				1		1										
3	3	3		1												
5	4	4		1			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
							✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
							✓	✓		✓						
4	4						✓	✓					✓	✓		
							✓	✓		✓						
							✓	✓	✓	✓	✓	✓		✓	✓	
							✓	✓		✓	✓				✓	
							✓									
							✓	✓		✓	✓			✓	✓	
							✓	✓		✓	✓					
4			2				✓	✓	✓	✓	✓		✓	✓	✓	✓
								✓		✓	✓					
4			2		1		✓									
4	3	3														
5	3	5		2												
							✓	✓	✓	✓	✓			✓	✓	✓
							✓	✓		✓	✓					
5	3	3					✓	✓	✓	✓	✓	✓		✓	✓	✓
4	1		1		1											
4		2														
							✓	✓	✓	✓	✓	✓		✓	✓	✓
							✓	✓	✓	✓	✓		✓	✓	✓	✓
5	4	2		2			✓	✓		✓	✓			✓	✓	
3	4	2					✓	✓	✓	✓	✓		✓	✓	✓	
							✓	✓		✓	✓					

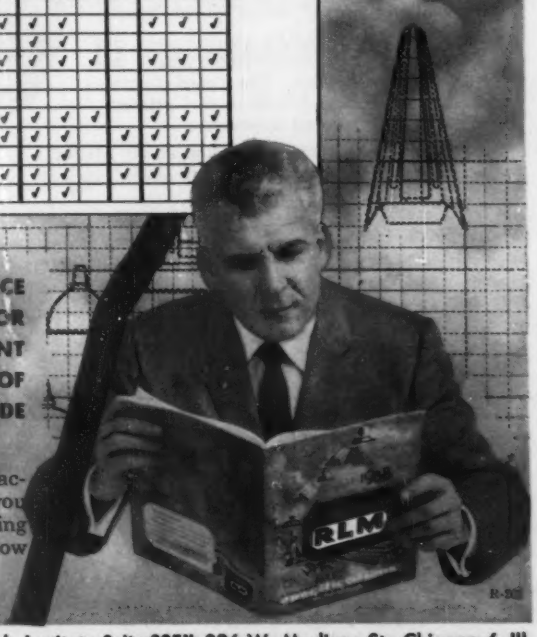
	ABOLITE LIGHTING DIV.
	APPLETON ELECTRIC CO.
	BENJAMIN ELECTRIC MFG. CO.
	DAY-BRITE LIGHTING, INC.
	EASTERN FIXTURE CO., INC.
	ELECTRO LIGHTING CORP.
	ENDER-MONARCH CORP.
	FLUORESCENT FIXTURES OF CALIFORNIA
	GLOBE LIGHTING PRODUCTS, INC.
	THE EDWIN F. GUTH CO.
	KEYSTONE ELECTRIC MFG. CO.
	LIGHTING DYNAMICS, INC.
	THE MILLER CO.
	MITCHELL LIGHTING DIV.
	MULTI ELECTRIC MFG., INC.
	OVERBAGH & AYRES MFG. CO.
	QUADRANGLE MFG. CO.
	RUBY-PHILITE CORP.
	SMITHCRAFT LIGHTING DIV.
	SMOOT-HOLMAN CO.
	THE SPERO ELECTRIC CO.
	THE STEBER MFG. CO.
	SUNBEAM LIGHTING CO.
	SYLVANIA ELECTRIC PRODUCTS, INC.
	WESTINGHOUSE ELECTRIC CORP.
	WHEELER REFLECTOR CO.
	WORK-O-LITE CO.

* Aluminum Reflectors all others are Porcelain Enamel

Note: Many manufacturers make incandescent RLM Units for more than one lamp size. The numerals refer to the number of different-size RLM Units which the manufacturer offers under the specification.

RLM ADDS NEW SPECIFICATIONS FOR SPECIAL SERVICE FLUORESCENTS.....REVISED SPECS COVER UNITS FOR 800 ma. LAMPS.....BROADENED INCANDESCENT STANDARDS FOR REFLECTOR SIZES AND TYPES OF LAMPS.....EVERY RLM SPEC STRENGTHENED, MADE MORE IMPORTANT, REVISED UP!

These are some of the reasons why the leading manufacturers listed above are especially proud today, to bring you units bearing the RLM Label. They know that, by keeping pace with latest industrial lighting advancements, RLM now stands for more lighting quality than ever.



Send for Free 1958 RLM Specifications Book. Write: RLM Standards Institute, Suite 835N, 326 W. Madison St., Chicago 6, Ill.

soring a bill, for introduction in the 1959 legislature, regulating the practice of "Professional Designers." It is planned to incorporate the proposed Act in the Business and Professional Code, as Chapter 20, Division 3. As presently proposed, the legislation will be opposed by the Council as too broad in scope.

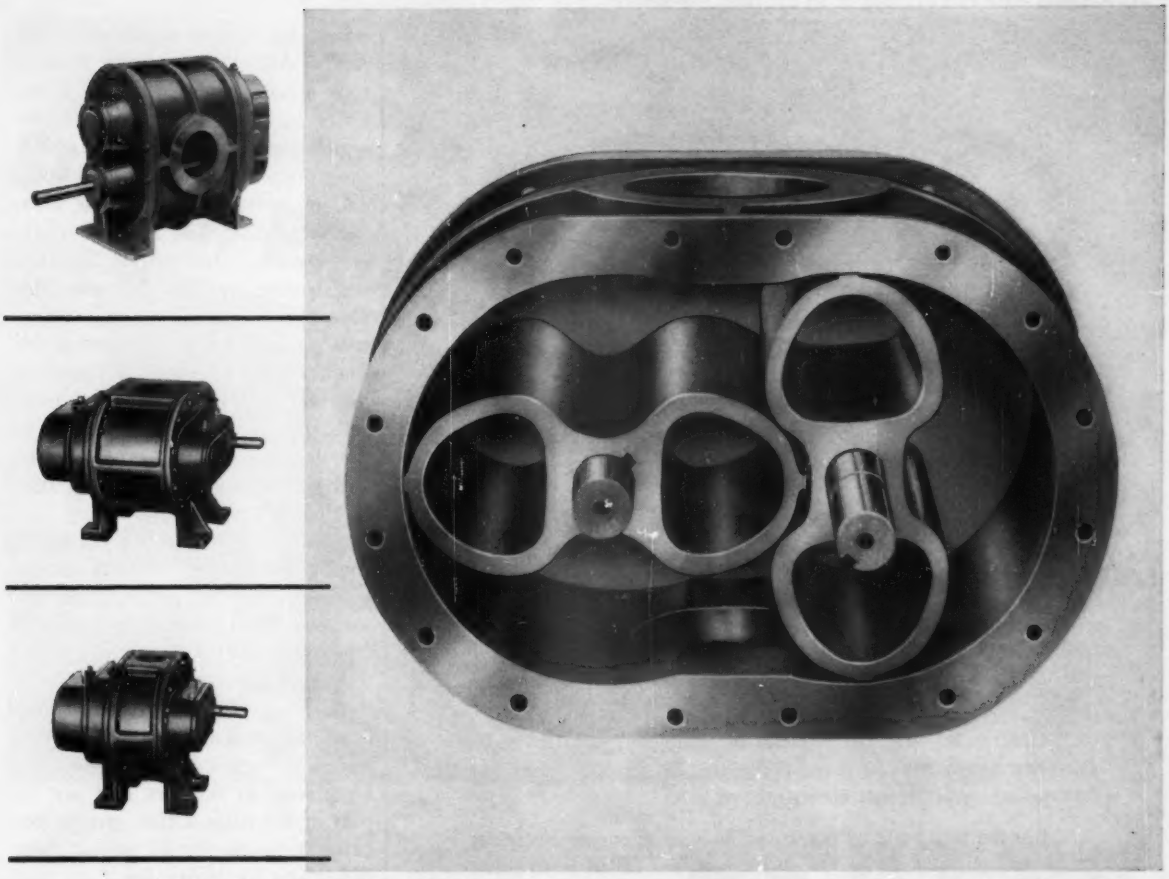
Registration Problems

Jack Long introduced the subject of the Board of Registration, its problems and the position of the Council relative to it. He said that the real problem was enforcement, but the question of reciprocity also was paramount. Some states with weak registration laws are refusing registration to California engineers. Idaho was mentioned as one of the states where some difficulty had been experienced.

Counsel Kennedy referred to a bill, vetoed by the Governor, that provided that the members of the Registration Board be selected from a panel of names submitted by the engineering societies. The legal profession uses this method of selection.

Foster K. Sampson, CEAC, introduced the subject of mandatory registration. Currently, California, unlike other states, requires registration only of civil and structural engineers. Electrical and mechanical engineers can register if they wish, but it is not required.

AIEE, representing both northern and southern sections, favors mandatory registration legislation and has drawn up a definition of electrical engineering and exemptions under proposed legislation. Leonard D'Ooge, ASME, San Francisco, submitted a definition of mechanical engineering. The Los Angeles section of ASME has gone on record in favor of mandatory registration legislation, but the San Francisco section has taken no position on the question. However, they have indicated that they would be interested in giving serious consideration to pro-



Sutorbilt blowers deliver air or gas at capacities up to 20,000 cubic feet per minute and pressures or vacuums up to 10 pounds. Design incorporates two figure-eight impellers which rotate in opposite direction and deliver a metered volume of air or gas.

SUTORBILT BLOWERS ASSURE TOP PERFORMANCE AND DEPENDABILITY

You want peak performance . . . from a blower that needs no special attention. Sutorbilt *ruggedness* gives it to you! Cases, headplates and impellers are of sound, close-grained cast iron. Heavy-duty anti-friction bearings maintain factory clearances throughout long service life. Wide-face herringbone gears, —run in a bath of oil—are engineered to absorb heavy shocks without affecting precise timing of impellers.

These and other Sutorbilt design features —plus highest-quality manufacturing methods—assure maximum, maintenance-free service from Sutorbilt blowers and gas pumps. Write for illustrated brochure giving complete specifications.

Representatives located in principal cities. Consult your classified telephone directory.

SUTORBILT IS WELL BUILT

CORPORATION, 2966 East Victoria St. • Compton, Calif.
Subsidiary of Fuller Company, Catasauqua, Pa.

ROTARY POSITIVE PRESSURE BLOWERS AND GAS PUMPS WITH VERTICAL OR HORIZONTAL MOUNTING

1163
5-19

posals for a new registration bill.

The AIChE, northern section, took a poll which indicated a majority in opposition to mandatory legislation. They would not, however, oppose mechanical, electrical, or petroleum engineers seeking legislation. The AIChE, southern section, also voted against registration, as did the new Mojave section. Some of the objection to mandatory legislation by the chemical engineers is based on the fact that many chemical projects involve engineering work in the electrical and mechanical fields, and they think it would be difficult to set up a definition.

As a result of this discussion, it was voted that Counsel Kennedy be instructed to prepare amendments to the Civil and Professional Engineers Act for mandatory registration of electrical engineers and that other groups present definitions for inclusion under the Act. Kennedy suggested that definitions be placed in the Act and not as part of the rules. Other groups desiring inclusion should present their definitions by November 1.

Corporate Practice

A special committee headed by Chairman Albert W. Daniels, of the San Diego Council of Engineers and Land Surveyors, Inc., presented an amendment to Section 6738, Business and Professions Code, governing corporate practice. The proposed amendment was devised to correct abuses of the Act and did not contemplate any prohibition of corporate practice. There have been several companies set up, using the word "engineering" in the name whose officers and owners were not engineers. They have solicited engineering work and then hired a registered engineer for the job.

Members of the Council agreed in principle with the objectives of the amendment to Section 6738, but it was pointed out that certain provisions would be objectionable to large engineering corpora-

wherever you see the name **BEATTY** you find SAFETY and EFFICIENCY

BEATTY SCAFFOLD . . . featuring Beatty patented "Snap-Lock," the greatest labor-saving device in scaffolding history. Open frame design to prevent accidents and provide easy access. Tubular cross braces for strength and low maintenance. Steel or aluminum.

For every scaffolding use, including Rolling Towers, Grandstands, Bleachers, Platforms, etc.

Also Beatty Heavy Duty Shoring Frames for reducing equipment costs and saving labor. Sales or rentals.

BEATTY PECCO-SPAN HORIZONTAL SHORING . . . the latest development in adjustable telescopic support for all types of concrete constructions. Saves up to 40% on shoring labor. Can be used with your present scaffold or Beatty Heavy Duty Shoring Frames.

One man adjusts to any span by wedgelock action—no bolts. Access to all working areas. Built-in camber.

BEATTY-PECCO CONSTRUCTION CRANE . . . a new GIANT reaching from 50 to over 300 feet in the air to place materials at points of use. Electronic remote control. Automatic safety. Practical—adaptable. Highly mobile. Thousands now in use.

BEATTY SCAFFOLD, Inc. Tunnel Ave. & Beatty Rd. • San Francisco

SEATTLE	SALT LAKE CITY	BOISE	HONOLULU, T.H.	PORTLAND	EL PASO	SPOKANE	PHOENIX
Beatty Scaffolds, Inc.	Lynn Hansen Co.	Beatty Scaffolds & Power Tool Co.	Islands Welding & Supply Co., Ltd.	Beatty Scaffolds Co. of Oregon	Booker-Walker Supply Co.	Safway Scaffolds, Inc. of Spokane	Baker Thomas Lime & Cement Co.

tions. Provision (5), for example, reads, "All civil engineering plans, specifications, and civil engineering reports are signed by or stamped with the seal of the registered civil engineer in charge of the preparation of same and who is an officer of a corporation, or principal of a partnership or firm." It was pointed out that it would be impractical for an officer of a large corporation to sign all plans, specifications, and reports involving perhaps hundreds of drawings. Objection to provision (6) also was raised as it required that all officers of corporations be registered engineers. In some large engineering companies a few officers are responsible for accounting and other nonengineering activities.

It was voted that a special committee be appointed to confer with representatives of the larger engineering corporations to work out a suitable amendment to Section 6738 which would achieve the intended objectives without imposing unworkable conditions on innocent firms.

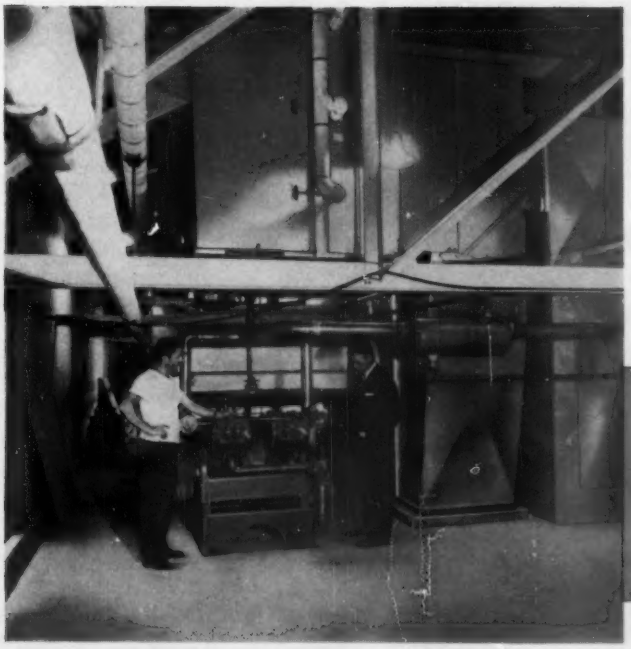
An amendment to Section 6735 of the Business and Professions Code was proposed. Provision (b) of this amendment reads, "It shall be unlawful for any signature, seal, or stamp to be placed on any civil engineering drawing, plan, report, or specification, except that of the registered civil engineer in responsible charge of the preparation of such drawing, plan, report, or specification, the owner, or such public agency or agencies as may have legal jurisdiction, indicating acceptance of responsibility by such agency or agencies." A shorter alternate also was proposed.

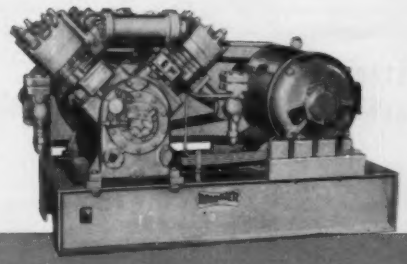
An amendment to Section 6787 of the Business and Professions Code was submitted to the Council for consideration. This amendment was designed to strengthen the engineers' Act. An alternate amendment added the title "consulting engineer" to other engineering descriptions in the Section and proposed a new provision pro-

FOR THOSE BIG AIR CONDITIONING JOBS...

Compressors from the BIG BRUNNER LINE

BRUNNER SINCE 1906





LONG LIFE, RELIABLE OPERATION FEATURES OF BRUNNER COMPRESSORS INCLUDE:

- MOUNTING BASES CONSTRUCTED OF STRUCTURAL STEEL.
- LOW AND HIGH PRESSURE TYPE CONTROL.
- FORCE FEED LUBRICATION.
- PRESSURE RELIEF SAFETY VALVE.
- MODULATION AND UNLOADED START (optional).

Typical of the BIG air conditioning jobs where architects, consulting engineers and contractors have learned to rely on BRUNNER compressors is the new Bostitch plant in East Greenwich, Rhode Island.

75 HP compressors, 100 HP compressors—whatever the size requirement—there was a Brunner unit to satisfy the design conditions.

Rugged workhorses of the various air conditioning systems at Bostitch, these units are tied-in to Dunham-Bush evaporative condensers and serve ceiling mounted air handling units for the Stapling, Engineering and Drafting departments. They also serve Dunham-Bush multizone units for conditioning executive offices and cafeteria areas.

Select Dunham-Bush and Brunner for *single source service and responsibility.*

BRUNNER DIVISION
DUNHAM-BUSH, INC.
UTICA, NEW YORK

DUNHAM-BUSH
AIR CONDITIONING • REFRIGERATION • HEATING • HEAT TRANSFER
WEST HARTFORD, CONNECTICUT • MICHIGAN CITY, INDIANA • RIVERSIDE, CALIFORNIA • BRUNNER DIVISION, UTICA, NEW YORK
SUBSIDIARIES

hibiting anyone from listing his name "in any telephone directory under the classification of chemical, civil, electrical, consulting, mechanical, petroleum, or structural engineers, or under any classification which is a subdivision of anyone for the foregoing branches of professional engineering without being registered as required by this act." It also was voted to refer an amendment, which would add "consulting engineer" to the list of professional titles, to this committee for study with a recommendation that it be incorporated in Section 6787.

Land Surveyors Act

William A. White, executive secretary of the California Council of Civil Engineers and Land Surveyors, Sacramento, reported on amendments to the Land Surveyors' Act. It was proposed that a section be added to the code to read, "Credits earned in a surveying curriculum, approved by the board, shall be accepted as the equivalent number of years of practice; provided that no more than three years of practice may be credited for attendance at school." Mr. White referred to accreditation of San Francisco City College for its course in surveying.

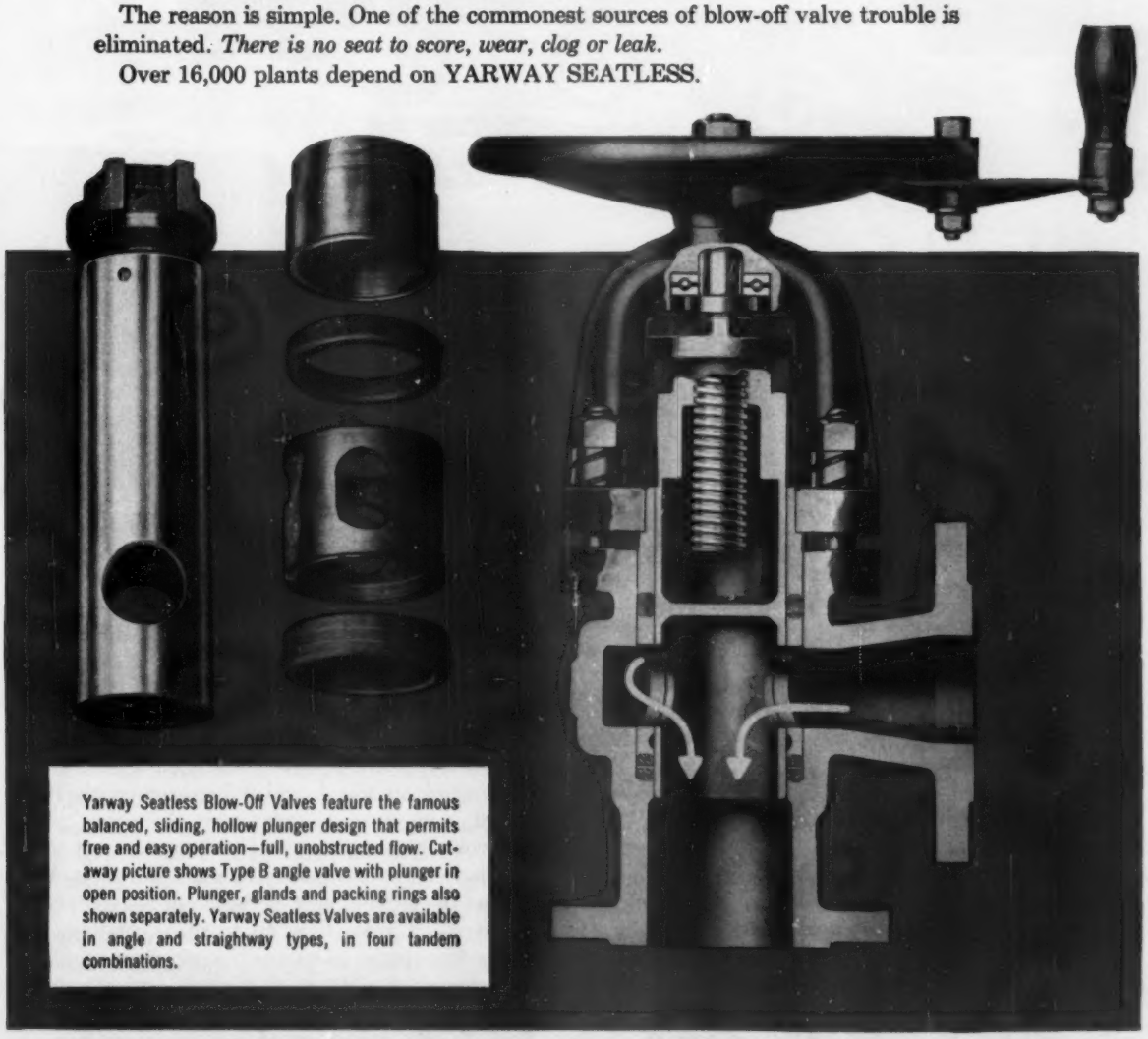
Several suggested amendments to the Code affecting civil engineers and land surveyors were presented: Section 8765 involves records of public lands; Section 11567 would make the Subdivision Map Act conform to the Land Surveyors Act with respect to margins on maps; Section 6731 would add land surveying to the definition of civil engineering; Section 8773 would require a map with every survey; and Sections 8745.1 and 8745.2 provide for an examination to test an applicant's knowledge of appropriate mathematical and basic engineering subjects and his ability to apply his knowledge and experience and to assume responsible charge in professional practice. ▲▲

seatless means savings

For nearly 50 years boiler plants in low and medium pressure ranges have been saving maintenance time and down-time thanks to dependable, trouble-free blow-down service from Yarway Seatless Blow-Off Valves.

The reason is simple. One of the commonest sources of blow-off valve trouble is eliminated. *There is no seat to score, wear, clog or leak.*

Over 16,000 plants depend on YARWAY SEATLESS.



Yarway Seatless Blow-Off Valves feature the famous balanced, sliding, hollow plunger design that permits free and easy operation—full, unobstructed flow. Cut-away picture shows Type B angle valve with plunger in open position. Plunger, glands and packing rings also shown separately. Yarway Seatless Valves are available in angle and straightway types, in four tandem combinations.

For information on Yarway Seatless Valves, sizes, materials, pressures, etc., write

YARNALL-WARING COMPANY 106 Mermaid Ave., Philadelphia 18, Pa.
BRANCH OFFICES IN PRINCIPAL CITIES

YARWAY SEATLESS ...a good way to specify blow-off valves.

Airport Engineering

A Series of Project Studies

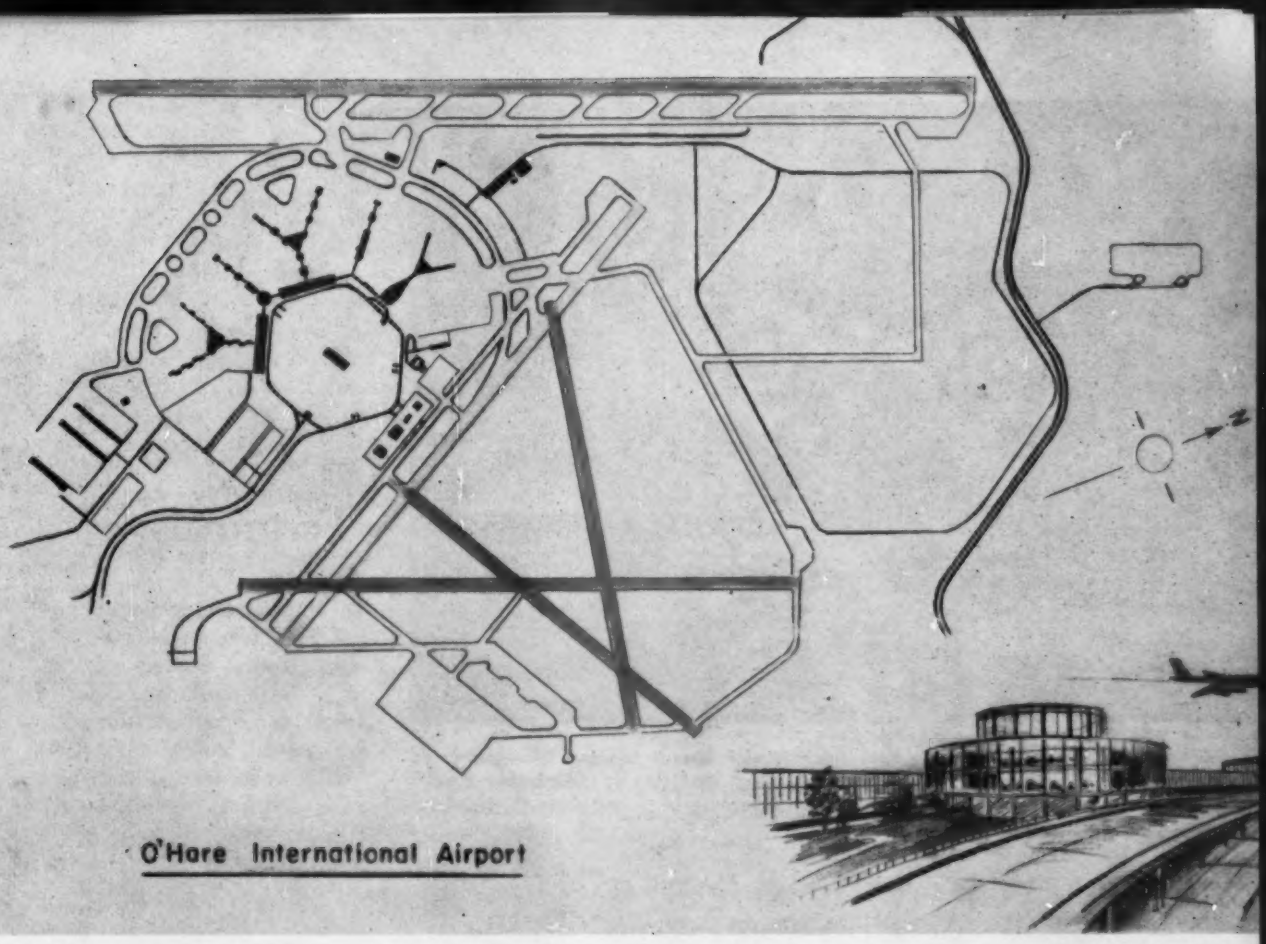
CONSULTING ENGINEERS are at work designing the airports of the jet age already upon us. The problems are much the same as those faced by the airport designer of a decade ago—passengers, planes, and parking—but the increase in the number of passengers and planes, and the demands of the high speed passenger jet only magnify them. The jets take longer and heavier runways and more of them. Runway lighting must be improved, and somehow the noise problem will have to be solved. Hangars large enough to service the new planes will have to be located within the airport area, and hydrant systems will replace fuel trucks.

Planes are only part of the problem. In the next six years the number of air travelers will double. This even may be too conservative an estimate if the railroads continue to discourage passenger traffic. This means that terminals will have to be designed to handle all these people and their cars.

The average traveler will be delighted to get from New York to Chicago in less than 90 minutes, but he will be somewhat less than delighted to find that it takes more than 400 minutes on the ground from the time he leaves his Manhattan hotel or office to arrival in the Loop in Chicago. The time required for ticketing, baggage handling, and ground transportation always has been a frustrating aspect of air travel, and it becomes relatively more of a nuisance as flying time decreases.

The consulting engineer will have to find ways to speed passenger movement. It must be a quick trip from the parking area to the ticket office. Baggage must get from terminal to plane, and particularly from plane to terminal, much more rapidly. Passengers should not go through cold or rain to get from plane to terminal or terminal to plane.

Basically, the movement of passengers and baggage is a matter of better materials handling. Since consulting engineers have contributed much in the field of industrial materials handling, it is time that this knowledge and experience be carried over into terminal design.



O'Hare International Airport

Another problem in airport design has been the tendency for the design engineer to think of the airport as a thing alone, unrelated to the rest of the metropolitan area. Few airports today are tied in properly to the urban transportation system. So-called "limousines" and airport buses are rather poor methods of transportation for the airline passenger who has just left the comparative luxury of even a "tourist" flight. Airports being designed today will have to be served by broad highways, reasonably priced and convenient helicopter connections, and perhaps some kind of rapid transit system capable of handling the passenger and his baggage rapidly and comfortably.

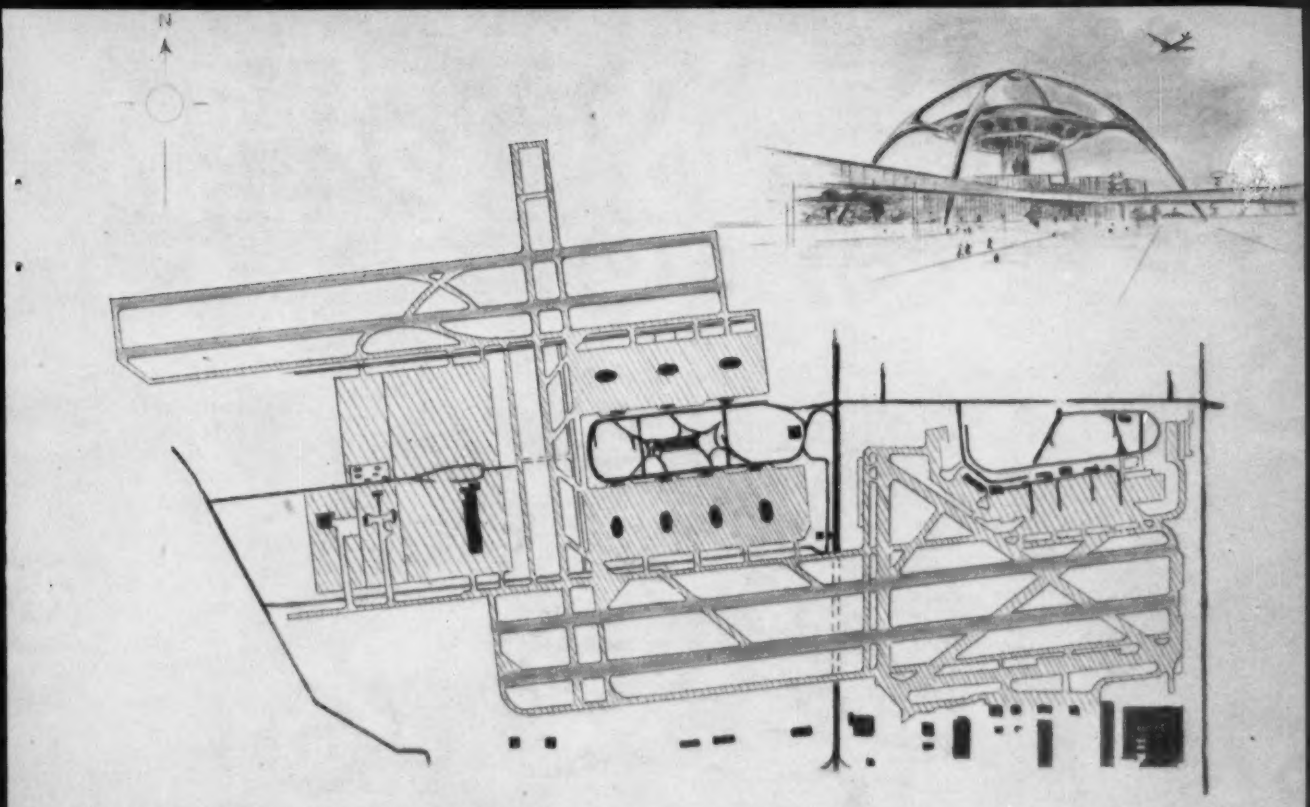
The passenger, preoccupied with his own travel problems, also is seldom conscious of the traffic and loading difficulties of the pilots and the other airline personnel. Only when the ceiling lowers and his own plane waits for what seems like hours rather than minutes at the end of the runway, or when the planes are stacked up in the fog above his destination, does he find himself involved.

Airport capacity is a serious problem for the consulting engineer. He must put the runways in configurations that provide the maximum capacity from the ground area available. His design not only must permit the greatest number of planes to land in the shortest possible time, but he must have turnoffs onto taxiways so positioned that planes that have landed can get off the runways and to the concourse aprons quickly and safely.

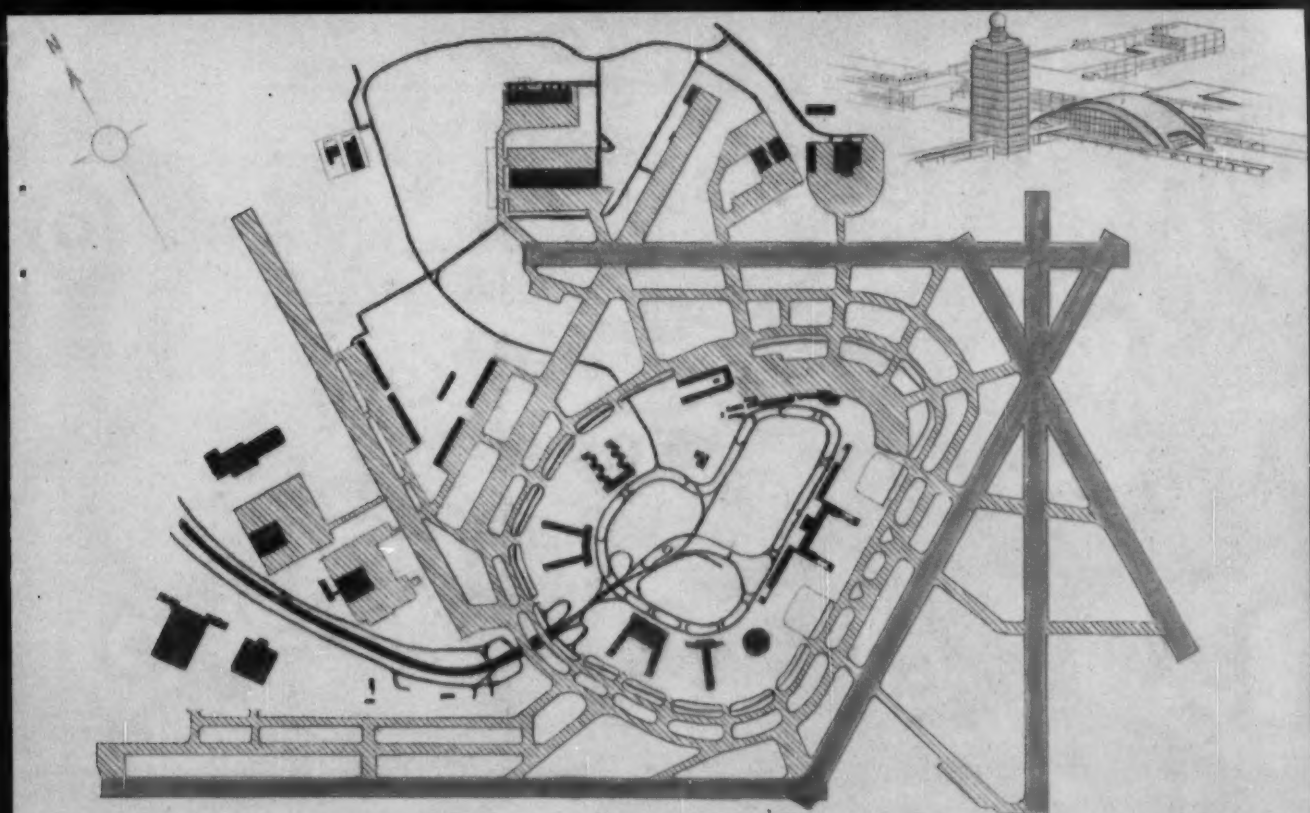
These drawings show five answers to modern airport layout. These are larger fields, fields that now are, or in a few months will be, handling domestic and overseas jets. But they are in no sense unique. Jet service will not always be limited to a few major airports. They some day will be operating out of nearly every commercial airport in the country—Kalamazoo as well as Chicago, Syracuse as well as San Francisco.

The consulting engineers designing smaller fields may have less money to spend, but in most instances they will have the advantage of more open and suitable sites close to town.

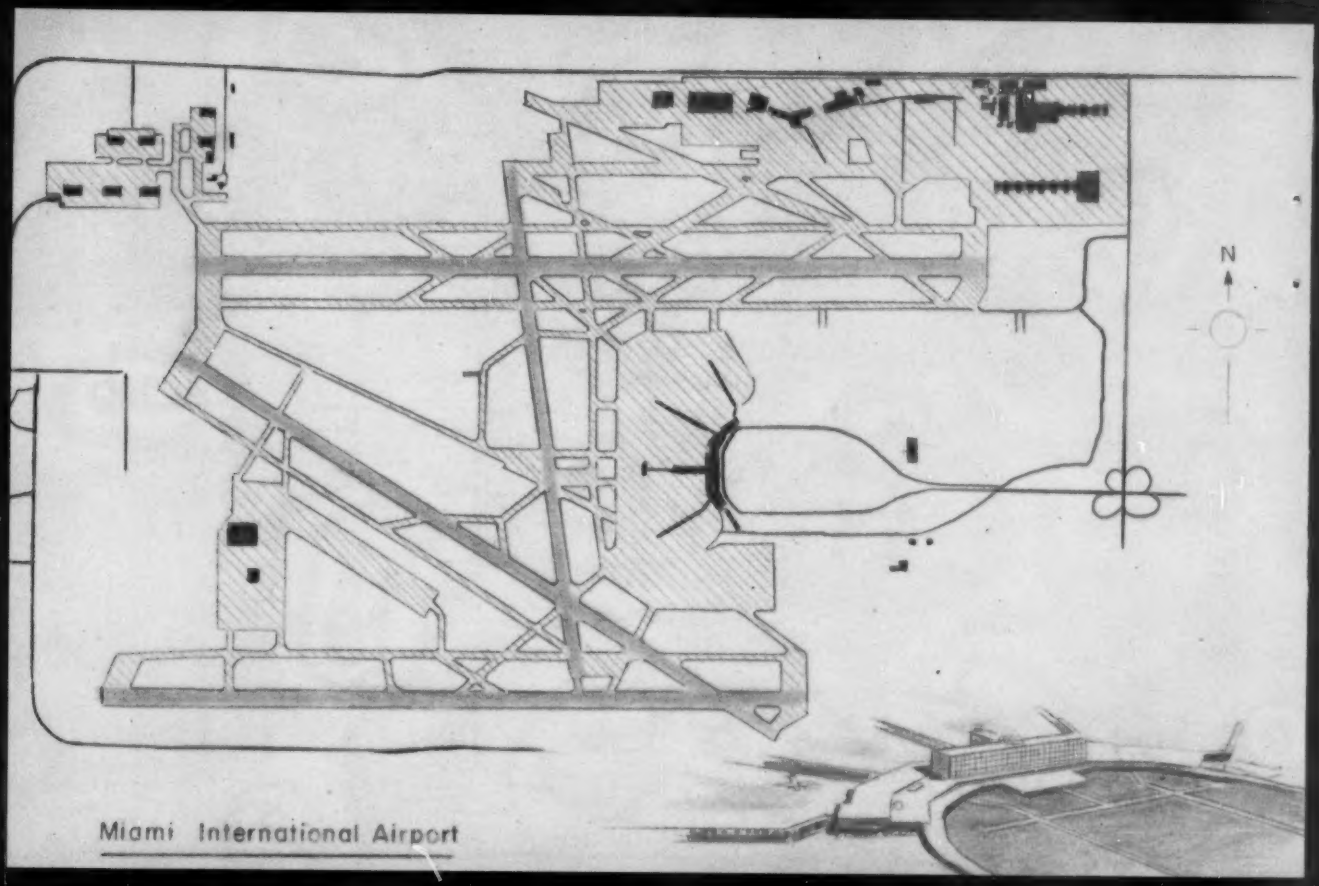
On the pages that follow are examples of the best airport design work being done today. Here are the newest ideas in terminals and hangars, control towers and utilities, runway configuration and lighting, fueling systems and noise control—every major aspect of modern airport design.



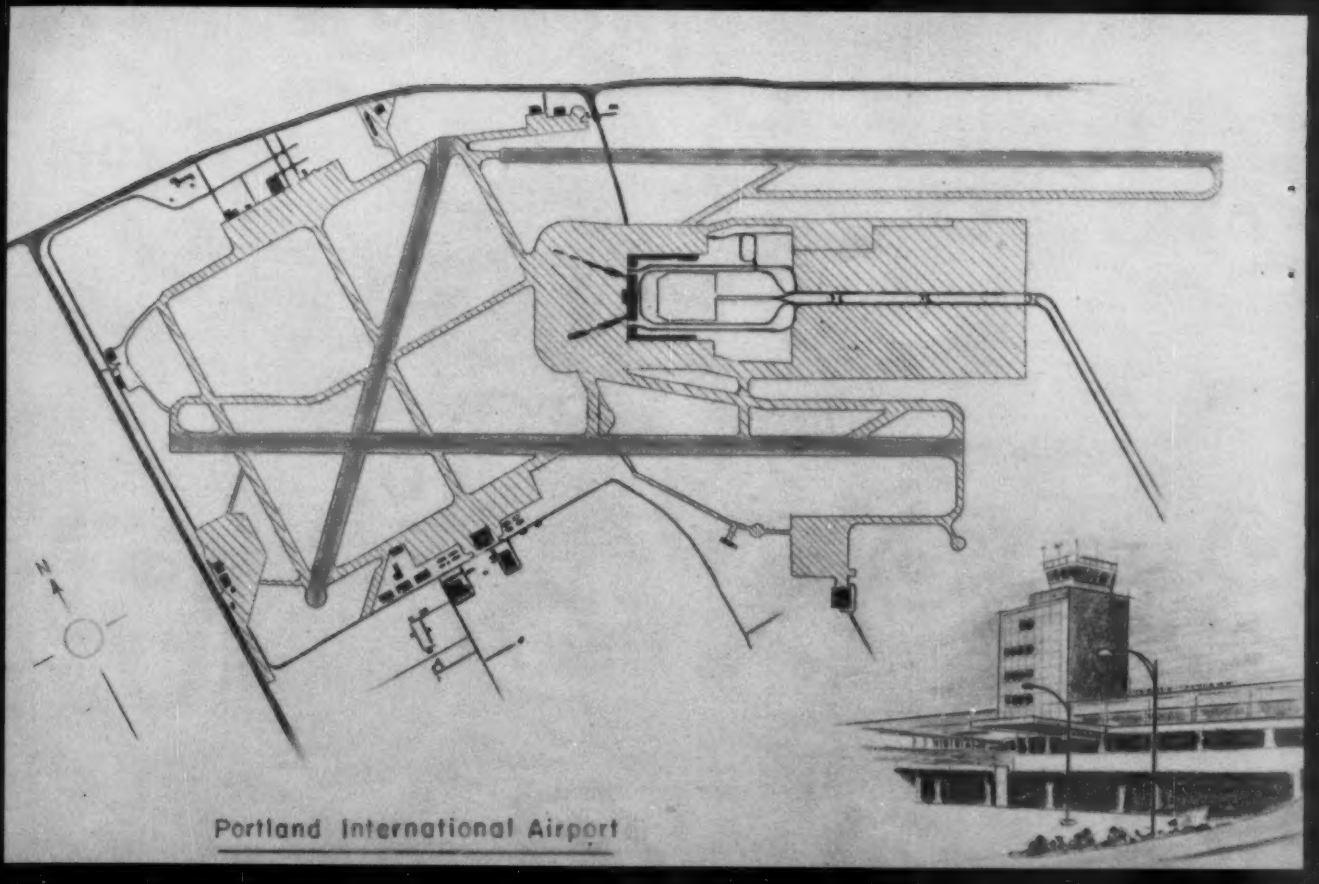
Los Angeles International Airport



New York International Airport



Miami International Airport



Portland International Airport

Terminals

TWA's $12-million New York International Airport terminal is a concrete shell structure. Its roof spans 300 feet, with two 54-ft high lateral cantilevers. Moving sidewalks transport passengers to and from flights.

THE TERMINAL – the link between ground and air – must coordinate the disorganized streams of passengers and visitors, baggage and freight, vehicles and aircraft entering and leaving the airport. With jets drastically reducing flying times – New York to London in 390 minutes – terminal efficiency becomes increasingly important.

Modern approaches to airport terminal arrangement are excellently illustrated by the unit terminal (the satellite concept) used at both New York and Los Angeles International Airports. This scheme of decentralized terminals allows passengers of each carrier to be processed separately. Each airline, with its direct competitive stake in the comfortable and speedy processing of its own customers, can express its own preference in terminal design. Smaller airports or airports with a high percentage of transfer passengers still do better to stay with a central terminal plan.

New York International Airport

New York International Airport is the first to be ready for the jet age. Already in operation is the new control tower and the 11-block long International Arrival building with flanking wing buildings. Soon to begin operations are its seven domestic terminal buildings – one for each of the major U.S. airlines serving the port. The $150-million terminal will handle nearly a million passengers a month by 1965; 140 aircraft will be on the field at one time during peak operations.

The three-story International Arrival building, with its concrete arched roof main entrance, houses customs, public health, and immigration services as well as restaurant and concession facilities. New-

Ticketing building at Los Angeles International Airport is located on depressed parking lot level.

ly arranged customs facilities speed processing of incoming passengers, the passenger claiming his baggage and taking it in a supermarket cart to any of 32 moving belt conveyors for checkout in one of the two customs halls. The two wing buildings include ticket counter, lobbies, and offices for 14 foreign airlines. Four two-story passageways serve 24 foreign airline aircraft positions.

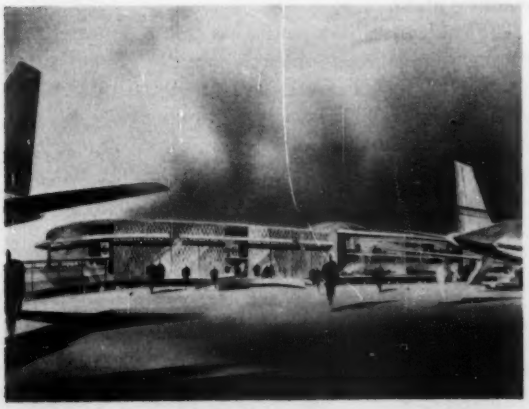
A drawing (page 89) shows typical routes of incoming and departing overseas passengers. Domestic passengers will use the airline unit terminals located around the 660-acre central oval.

Los Angeles International Airport

Los Angeles International Airport also is planning for the future. With its present facilities unable to meet the recent surge of air travel, airport authorities selected a group of consulting engineer firms, including Pereira and Luckman, Welton Beckett & Associates, and Paul R. Williams, to plan presently needed facilities and look toward economical future expansion.

Dominating the central area will be a striking 130-ft high arched observation deck and cantilevered restaurant covered with diamond shaped flat steel plates. It will have a span of 350 feet. Surrounding this modern structure will be a 5000-car parking lot, designed to permit erection of a second deck when required. The present lot is depressed 14 feet below apron level, enabling passengers to walk directly into airline ticketing buildings along the perimeter.

One portion of the first floor of each ticketing building will be used for ticketing and baggage check-in; the remainder will be for baggage claim. The second floor of these buildings is for airline administrative use and will be connected to the main concession area by overhead pedestrian walks.



Ellipse shaped satellite building at Los Angeles sits on apron surrounded by ten gate positions.

New terminal facilities in Honolulu include an 11-story reinforced concrete administration building.

The central heating plant and central telephone exchange are located at parking lot level under the concession area. By addition of modular structural bays at the ends, each 325-ft x 70-ft ticketing building can be doubled in size.

Under-Apron Passageway

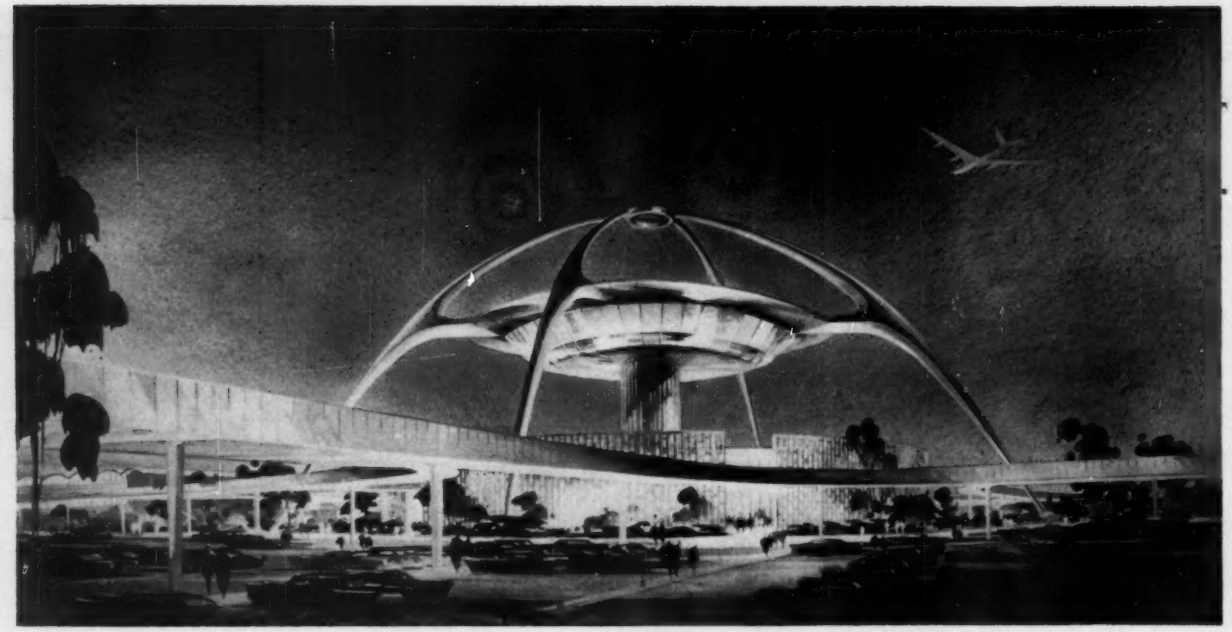
Passengers proceed from the ticketing buildings directly to the ellipse shaped satellite building via an underground passageway. Baggage will be transported through separate channels. The first level of the satellite building is exclusively for airline operations. Where baggage conveyors are used, sorting will be accomplished at this level. The second level is the public lobby and will have concession facilities. The passenger remains on one level from the time he parks his car until he reaches the satellite end of the passageway.

Six satellite and ticketing buildings will be built with space allocated for a seventh. Each satellite building will be surrounded by 10 gate positions providing complete flexibility for aircraft taxiing movement. One satellite-ticketing unit will house international air carriers together with immigration, public health, and customs services. A second unit will serve local and regional air carriers, while the remaining units are assigned to four U.S. airlines.

Portland International Airport

Portland's $6-million International Terminal recently opened to the public, also is designed to be expanded in size in easy stages to accommodate increases in air travel. The new terminal can handle one million passengers annually in its present form.

Atop the 500-ft long, three-story main building



This modernistic observation deck and restaurant is to be located in the center of Los Angeles terminal area

is a six-story control tower. Two concourses extend from the main building enabling passengers to reach aircraft gate positions with a minimum of walking. The completed first stage has 18 plane loading positions along the two concourses. Later additions to the concourses, and the addition of wings to the main building will add 16 more gate positions.

Foundations are 25-ton composite wood and concrete friction piles. The main building is reinforced concrete beam and one-way slab construction. Passenger concourses are structural steel.

Prerecorded Flight Announcements

There are 250 feet of passenger counter space in the main passenger lobby, shared by seven airlines. Expansion up to 420 linear feet or more is anticipated in the development plan. A central paging and background music system provided by the telephone company was incorporated in the building design by Grant Kelley & Associates and George Pettingel, consulting electrical engineers. A unique feature is the use of prerecorded announcements of flights on disc records. To announce a flight the proper letter number combination is pressed and the announcement is automatically made.

Nineteen roomettes, each with bed, shower, and telephone, are available at small charge in the main building for passengers resting betwen flights.

Dedicated only four years ago, San Francisco International Airport's terminal facilities are no longer adequate and are being refurbished and expanded. As part of a $25-million long-range improvement program, four new passenger loading concourses complete with moving sidewalks will be added to the four already in existence. Escalators will be installed in the main building as well as in the concourses. John A. Blume and Associates, San Francisco, are structural consultants.

Downtown Check-In Building

In parallel with the more rapid movement of passengers, a downtown passenger check-in building will process baggage. Buses will transport it to the airport, and conveyors will bring it directly to separate handling areas.

The concourses now under design present a challenging foundation problem, since the ground surface in the terminal area, all of which originally was reclaimed from San Francisco Bay, still is settling. Welton Beckett & Associates are using heavy tie beams and continuous footings for all new buildings.

Oakland Reclaims Bay for Expansion

Across the Bay, Oakland also is embarking on a mammoth reconstruction and expansion program. Included in Oakland International Airport's $17.5-million project is a 180-ft diameter terminal building with exits to plane loading areas from each side of the central dome. Hamilton and Williges and Isadore Thompson are designing the dome as

concrete cast in place over precast lightweight form units to be left in place as the ceiling finish.

The New York consulting firm of Knappen, Tippetts, Abbett & McCarthy drafted the master plan including soils studies for the airport's improvement program in 1954. The plan included expansion of the airport one mile out into the shallow waters of Oakland Bay. A 4½-mile dike encircling 1460 acres of underwater property was begun in September 1955. Dalton and Dalton designed the pump-houses for dewatering of the area. Completed in March of this year, the dredge filling required nearly 14-million cubic yards of sand. Clyde E. Bentley, Oakland is mechanical-electrical consultant for the over-all project.

Honolulu International Airport

Hawaii will greet the increasing numbers of tourists arriving by air with a new terminal at Honolulu International Airport. Facilities to be built include an overseas departure area with an 11-story administration building, an overseas arrival section, and an inter-island section for local flights. All are arranged around a central parking area with covered pedestrian concourses.

Quinton Engineers, Ltd., Los Angeles consulting engineers, have designed the administration building of reinforced concrete throughout; terminal buildings will be structural steel frame with reinforced concrete walls and floors.

The overseas departure section consists of two ticketing and baggage handling buildings surrounding the central administration building, and a multistory lobby, concession, and shipping-service building. The lobby and main public areas of the inter-island section are housed in an open-type structure, forming a covered lani for ticketing and passenger handling facilities.

Newly opened Portland air terminal has a six-story control tower atop the three-story main building.

Vacation-bound winter air travelers in this country also will get fast service at the 1200 feet of passenger counters at Miami's huge new one-million sq ft 20th St. Terminal. Five passenger loading and unloading piers, branching from the central terminal area, will serve 63 aircraft positions. A 5-story 270-room hotel, designed by Jorgensen & Schreffler, Miami structural engineers, is being erected atop the present two-level service building. Plans are being prepared to enlarge the terminal building to furnish an additional 450 feet of passenger service counter and a sixth pier to accommodate 11 more aircraft. All buildings are structural steel frames, except the concrete service building and hotel.

Passengers enter the terminal building at the second floor from a one-half mile long, 50-ft wide vehicular ramp. They proceed to the ticketing counter located in one of the two-story piers and

Miami International Airport's new 20th Street terminal will include 270-room hotel, 1650 feet of counters.

Aerial view of control tower, arrival building, and wing buildings at New York International Airport.

then go down to the first floor to board the aircraft.

Chicago's O'Hare Field, long shunned by airlines and passengers alike because of its distance from the Loop, is getting a new superhighway. An expansion program now under way is designed to accommodate the new volumes of passengers expected to use the convenient new road. Forecasters estimate O'Hare will serve five million passengers in 1965.

The principal area of expansion will be the terminal at the center of the airport. Two unit terminals with attendant concourses will be added. The present terminal building will be converted into an international arrival and departure building for trans-polar passengers. Sufficient apron space is being provided for 60 aircraft.

Mechanical Services

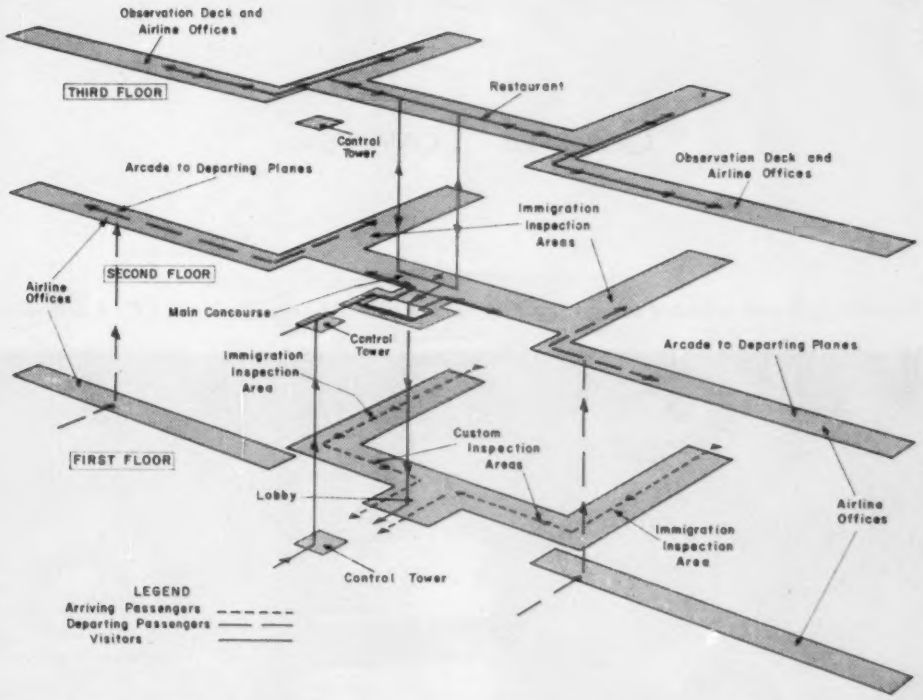
The heating, cooling, and ventilation services required by different airports depends to a large extent on geographical location. For example, Honolulu International Airport has no provisions for heating of terminal buildings. Heating and air conditioning, however, are provided to administration building offices and the control tower.

Both New York and Los Angeles International Airports have a central heating and cooling plant using high temperature water. The New York International Airport's plant generates water at 400 F and 250 psig for both heating (160-million Btu/hr capacity) and cooling. Centrifugal pumps, rated at 700 gpm and 160-ft head, circulate the heated water to the buildings in the central oval, including the International Arrival building, the two airline wing buildings, and the control tower. Seelye Stevenson Value & Knecht, mechanical consultants, say the hot water will produce up to 6300 tons of refrigeration in lithium bromide absorption machines.

Motor-driven centrifugal compressor refrigeration units with 5000-tons capacity and a single absorption unit for minimum load conditions will be used at Los Angeles. The satellite buildings, largely enclosed by glass, will use radiant floor panel heating with reheating and recooling at the perimeter. At most airports in this country, however, only the control tower, small groups of administrative offices, and restaurants are air conditioned.

In contrast with these central heating and cooling installations are the installations at San Francisco and Portland airports. San Francisco uses warm air heating except for a portion of the lobby floor near airline offices and ticket counters which is heated with a radiant floor system.

Portland Terminal, on the other hand, is heated by hot water. W. Bruce Morrison, consulting mechanical engineer for the project, specified a total of 80 tons of refrigeration with chilled water supplied to the control tower and restaurant. Direct



Typical routes followed by departing and arriving overseas passengers in International Arrival building.

expansion cooling with individual thermostat and air volume controls is used for the terminal building roomettes.

Electrical Service

An investigation by David R. Graham and Associates, consulting engineers of Tulsa, of electrical service features of 31 of this country's largest airports shows that 14 of these airports have two or more energized electric service lines from the public utility. No separate standby line is provided for 10 of these 14 airports.

Only one service line normally carrying load is included in 17 of the 31 airports. One full capacity standby line is available at 10 of these 17 airports, but some of the others have only a reduced capacity standby line. Several of the 31 airports have no electric utility standby service.

Engine-generator standby units are not used (except by the CAA as back-up for its critical communications and navigation aids) at 13 airports, including Chicago Midway, Detroit, Denver, Fort Worth, Indianapolis, and Milwaukee. One or more engine-generator standby units of reduced load capacity are used at 17. No airport has full capacity engine-generator standby equipment.

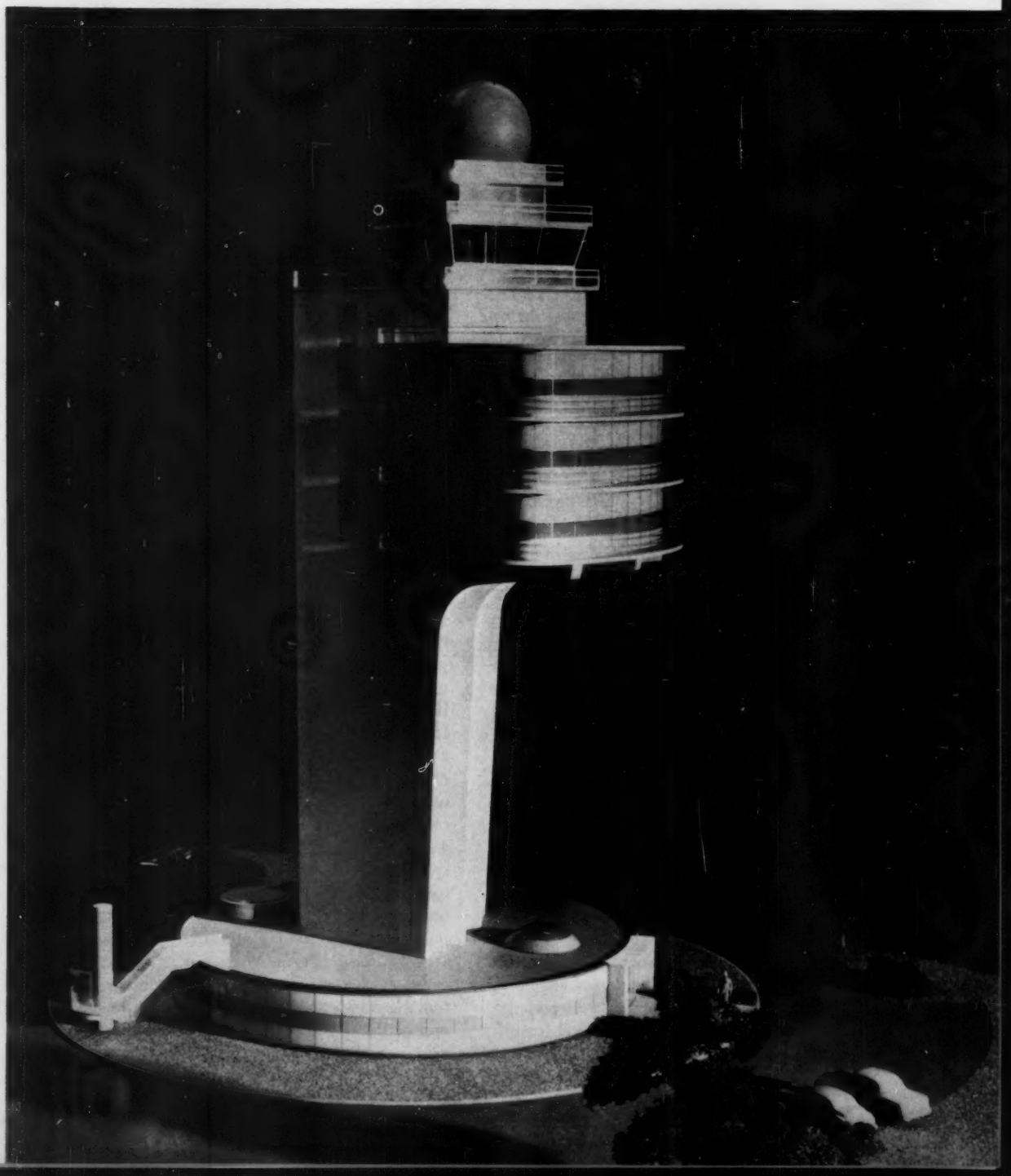
Based on these studies, the Oklahoma engineering firm is designing for the new Tulsa Airport development an electrical service with a novel feature to reduce the possibility of even momentary loss of voltage. Two 4160-v service lines from opposite ends of the utility's 13,200/4160-v doubled ended substation will supply separately the two ends of the airport's double-ended substations rated at 4160/480Y/277-v.

Tie breakers on all substations are normally open. One second time-delay relays hold all of the airport substation secondary main and secondary tie breakers in their regular operating position through momentary voltage drops caused by operation of the utility's breakers. The airport substation switchgear thus does not operate in response to any momentary voltage drop which can be restored by the operation of other switchgear. It is, however, fully responsive to faults that it should clear.

Since the most reliable single source of electric energy at the airport is a secondary feeder from one of the airport double ended substations, one of these feeders is stepped up by a 3-phase 480/4160-v transformer to feed the runway lighting switchhouse, the control tower, the radar equipment, and the CAA communications and navigation equipment, all of which are grouped one-half mile from the terminal building and the major substations. One engine-generator standby unit located at the runway lighting switchhouse has automatic starting and throw-over control to the load end of the 4160-v feeder supplying these loads.

Control Towers

Model of Newark's $1.8-million control tower; the actual building should be occupied by the CAA next summer.



Striking Los Angeles airport control tower has administrative office space on lower floors and side wings of tower.

THE MECHANICAL-ELECTRICAL consultant generally faces his most difficult airport assignment in the design of the control tower. Whether located atop the main terminal building or as a separate structure, the control tower is always a tall and slender compact structure, packed with temperature and humidity sensitive electronic gear.

Newark Airport

Slocum and Fuller's approach to Newark Airport's architecturally unique control tower required extreme flexibility for the heating and air conditioning systems. A perimeter air induction system was selected using small high velocity ducts, thus permitting individual control in each module. Because of the necessary year-round operation of the refrigeration equipment, the cooling tower was specially designed to prevent freeze up.

All heating, both marginal and winter, is done with primary air; all cooling is done with chilled water secondary coils in the modular units. As in a conventional induction system, dehumidification is accomplished in the main air handling unit.

The control cab on the top floor has its own system, with a factory-assembled air handling unit with filters, chilled water coils, heating coils, and low velocity ductwork. A standby heating and ventilating unit also is included.

Noise level is kept to a minimum by passing the high velocity primary air through two sound traps. Fan outlets and discharge ducts are acoustically treated, with the induction units carefully designed for low noise. Particular attention had to be given to the acoustical treatment of the machine room beneath the control cab.

The interior lighting arrangement also called for extreme flexibility. The ceiling adopted by the consultants was based on grid lines on two-ft centers. Two-ft by two-ft fluorescent luminaires are connected to a 6-ft flexible cable from a centrally located box. This arrangement permits a choice of nine different locations for each luminaire. Fixtures can be shifted as desired within a few minutes.

Strobel and Rongved, the structural consultants, designed the 150-ft high stepped structure in reinforced concrete. A ribbed concrete shaft, enclosing an elevator, supports the three cantilevered office and equipment floors at the 65-ft level.

Los Angeles International Airport

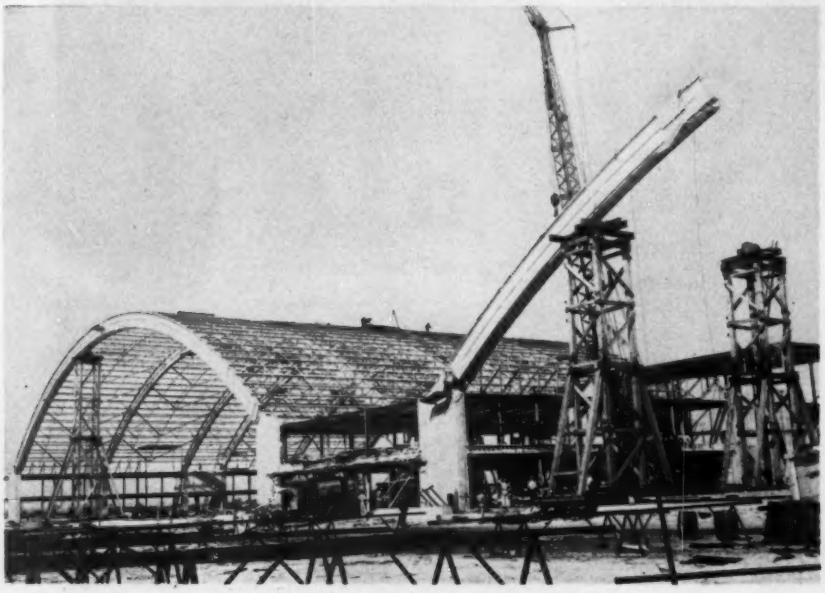
Design of the new two-tiered control tower at Los Angeles International Airport—170-ft high and only 40-ft square—required another approach. A steel frame resting on precast concrete piles was selected. Floors of the structure consist of lightweight concrete filled steel decking.

Oakland Airport

Another new control tower is Oakland's 12-story curtain wall building. Indeco Engineers, Inc., San Leandro, Calif., designed the enlarged first and second floors of reinforced concrete. The tower frame above the second floor will be rigid frame structural steel construction, with lightweight concrete filled steel decking. The entire structure will be supported on concrete piling with a minimum allowable bearing of 40 tons.

The heating system will be reverse return hot water, fed by a 500,000-Btu/hr gas-fired boiler on the first floor. Heating will be provided at most floors by forced warm air supplied by ceiling type units. The control cab and one instrument floor are heated by a hot water coil installed in the 5-ton packaged air conditioner units on those floors.

Separate oversize cooling towers will be used for each refrigeration unit. Cross-over connections in the condenser water piping will be provided so that in the event of failure of one tower, both air conditioners can be operated off one tower at slightly reduced capacity.



Hangars

Roberts & Schaefer-designed steel arch hangars under construction.

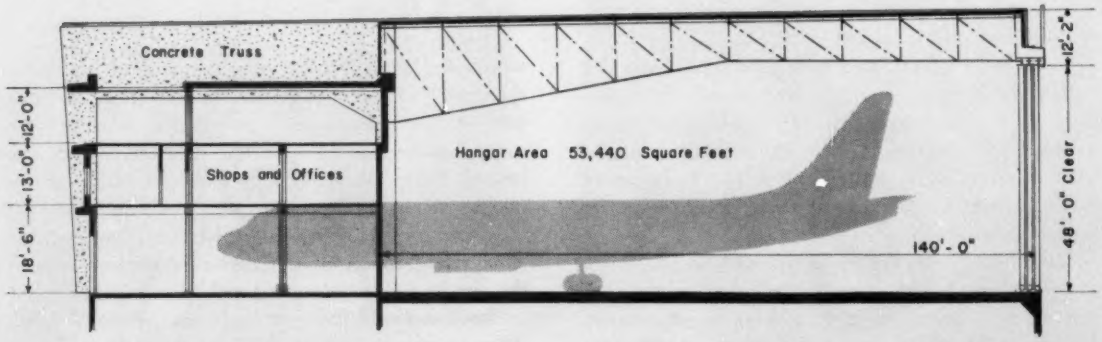
LARGE HANGARS, before World War II, were generally designed as two or three hinge steel truss arches. Steel girder arches also were used, either with built-up welded plate girders or with a series of rolled sections welded into a single arch. The reinforced concrete arch hangar became popular during the War because of the severe shortage of structural steel.

The steel arch of circular or near circular shape is one of the most economical structures for large span buildings if the superstructure alone is considered. However, because of the flat angle at which the load resultant enters the support, arches require elaborate buttresses. If the supports are joined by a tie below ground, the foundation problem is reduced to carrying the vertical load only, but a tie is costly and seriously hampers the economical operation of paving machinery. The main drawback of the arch hangar is that it does not lend itself to economical future expansion.

The present trend is toward cantilever hangars which inherently permit easy and economical expansion for future needs. Cantilever hangars with clear spans to 160 feet or more now can be built at costs competitive with the arch type hangar.

Double and Single Cantilever Hangars

The double cantilever design, with aircraft parked along both sides of a long central service bay, is appropriate for larger structures. The center bay



Elevation of huge prestressed steel truss, single cantilever hangar for United Airlines at O'Hare Field.

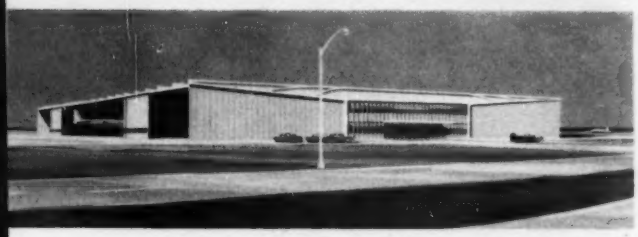
supports the two cantilever roof constructions, with hangar doors hung from the outer edges of the roof, allowing openings anywhere on the door tracks.

An example is the new 750-ft long American Airlines maintenance hangar at New York International Airport. Here Severud-Elstad-Krueger, New York consulting firm, used pairs of fulcrum columns, 71 feet on centers, to carry 143-ft 10-in. steel roof trusses. The center core areas have two intermediate floor levels suspended from the steel work between the fulcrum columns. The area below these floors on the ground level is clear, with space for 10 nose bays to take the largest commercial jets.

After studying the prevailing winds, H. K. Ferguson Company designed TWA's new hangar at San Francisco International Airport entirely open on one side to take advantage of the balmy climate. Big enough (135 x 320 feet) to handle two of the largest jets, the hangar is arranged for easy expansion to twice its size.

The 11 cantilever trusses frame into 33 WF 200 column sections supported on concrete piles. These trusses taper from 31 feet 9 inches at their crown to 6 feet at the outer edge of the roof. Transverse lateral forces are taken by a 58-ft high concrete block shear wall enclosing the service area side. Exterior surfaces are colored metal sliding above tilt-up concrete wall panels.

The two-story service area has shops and storage on the ground floor; administrative offices and bunks for standby crews are on the upper floor. A two-level mezzanine projects into the hangar area, providing space for maintenance control, lavatories, lunchroom, and future offices.



Proposed design for prestressed-precast double cantilever hangar for New York Port Authority.

Concrete shell single cantilever hangar of 90-ft overhang was 8 percent more expensive than steel.

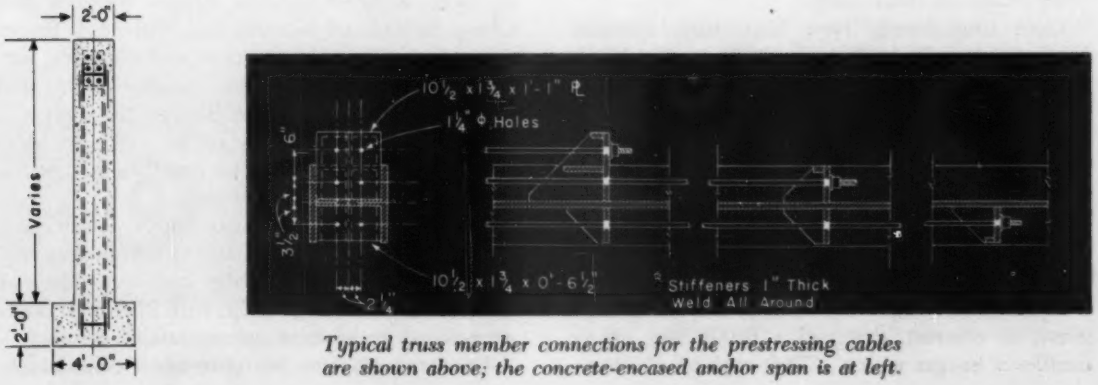
Prestressed Steel Hangar

This country's first prestressed steel hangar has been designed for United Airlines at Chicago's O'Hare Field by Ragnar Benson. Paul Rogers & Associates handled the structural design. It is of single cantilever construction. The roof is carried by 140-ft cantilever spans, prestressed with overlapping steel cables. With a door opening 362-ft wide and 45-ft high, the structure will accommodate two DC-8's and one DC-7.

Use of prestressing for the top chord of the cantilever truss enabled Rogers to reduce the amount of steel required and to eliminate or minimize effects of secondary stresses. The drawing shows the simple anchorages for the prestressing cables, which contribute to ease of construction. The anchor span is encased in concrete.

In addition to the dead load, the trusses are designed to resist 25 psf downward and 40 psf upward live load.

Rogers points out that creep and plastic flow are



Typical truss member connections for the prestressing cables are shown above; the concrete-encased anchor span is at left.

practically nil for structural steel, so there is no need for allowances in cable structures. Substituting high-strength materials for structural steel can bring about worthwhile economies.

Concrete Hangars

Though Italian engineer P. L. Nervi designed several in 1930, concrete hangars did not receive much attention in this country until the War. Postwar developments in prestressed concrete and the upward steel price spiral currently have changed concrete from a substitute to a competitive material.

One of concrete's main advantages is in its inherent fire resistance. But concrete is very heavy. Severud-Elstad-Krueger, New York firm, says: "Since airports usually are located in areas with poor soil, the great weight of concrete structures has been accompanied by extensive foundation structures."

Concrete Can Be Competitive

Roberts and Schaefer Co., New York architect-engineers, found that a shell-type 90-ft cantilever hangar designed for the Port of New York Authority was only 8 percent more expensive than steel cantilever construction. And a double cantilever hangar, using 380-ft prestressed precast girders, priced within 3 percent of steel truss construction. The center bay on this design is 100-ft wide with 140-ft overhangs on either side. Designing reinforced concrete shell-type hangars with a 340-ft clear span for the air force, Roberts and Schaefer found contractors could beat structural steel bids with six or more form reuses during construction.

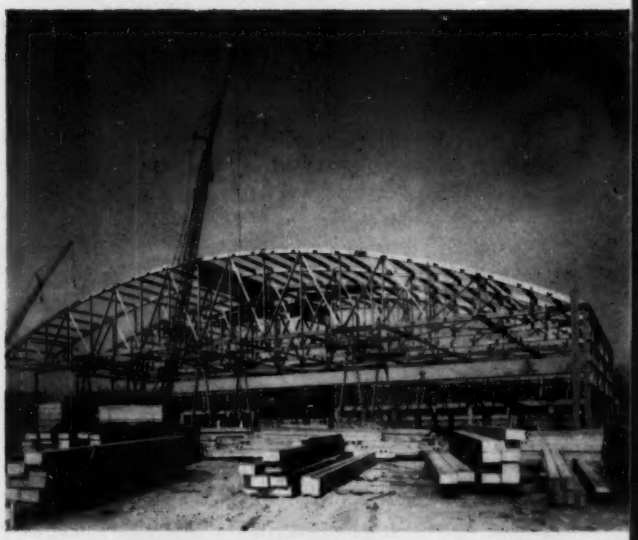
However this firm points out that "present folded-plate concrete cantilever hangars are not 3 percent more expensive than steel hangars, but almost 40 percent higher." But the great strides in prestressing indicate concrete will be used more widely in the future.

Laminated Wood Truss Construction

Because of its low cost, assembling ease, and fire resistance, laminated wood truss construction sometimes makes an ideal hangar.

Eipel Engineering, New York City, specified laminated wood members for a hangar at Westchester County Airport. This 150-ft x 750-ft hangar is actually three smaller hangars tied together side by side. Each small hangar has six 250-ft span laminated wood bowstring trusses, with wood braces and purlins. Trusses are carried on 11-in. x 17⅞-in. laminated wood columns 28¾-ft long. The hangar roof is covered with 2-in. tongue and groove wood sheathing.

Strobel and Rongved, New York consulting engineers, in contrast, designed a 640-ft long single cantilever hangar with a 137½-ft span for the same airport. This firm also has designed a similar hangar for Temco Aircraft Corporation, Greenville, Texas, with three 144-ft long horizontal sliding hangar doors. Total construction cost for the structure was less than $6.50 per square foot.



Laminated wood bowstring trusses of 250-ft span were used by Eipel Engineering for this hangar.

Because the usable height inside a hangar is determined by the lowest roof truss member, space above the truss line often is wasted, though heating and lighting systems can be hung there. For an addition to the Fairchild Engine & Airplane Corporation assembly plant in Hagerstown, Maryland, Strobel & Rongved built a flat roof and let the arches run through it and above.

Mechanical engineers for the 200-ft x 850-ft building were Guy B. Panero Engineers, New York consulting firm.

Design Criteria

In a study of hangars for the navy, a joint venture of three architect-engineer firms — Willgoos and Chase, Strobel and Salzman, and William A. Brown — considered floor arrangement and efficiency, vertical clearance, traffic flow, hangar doors, and ground servicing equipment. Because the study was on military hangars, many of its conclusions are not applicable to commercial installations, but the recommendations are of interest.

Since flexibility of hangar width, depth, and height are of great importance to the military, the single cantilever design was selected. Modular units 160-ft wide, 80-ft deep, with 27-ft-high doors were found to be most appropriate.

Hangar doors were found to affect considerably

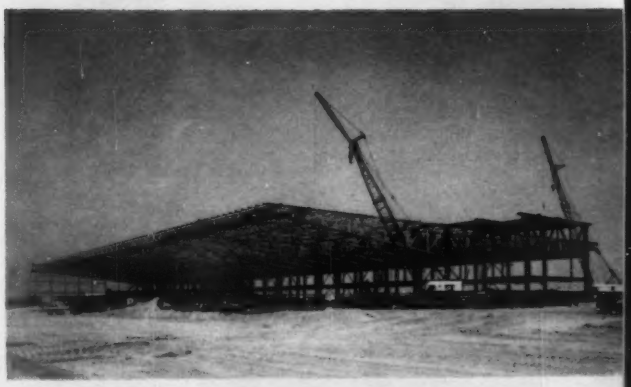
the over-all cost of a hangar. The navy had been using vertical lift doors (at $12 to $14 a square foot); lightweight horizontal sliding doors (at $5 to $6 a square foot) were suggested.

Mobile ground servicing equipment is efficient, flexible, and far less expensive than permanent overhead monorails or fixed ceiling-mounted hoists. Another advantage of ground equipment is that it is not confined to any one hangar but can be used in other hangars and on the apron areas as well.

Heating Systems

The architect-engineers also investigated heating systems: hot air (steam, hot water, or direct-fired), radiant floor heating, steam or hot water suspended units, infrared rays, electricity, and split system heating. Hot air was found to have the lowest installed and lowest operating costs and was recommended. Though comfortable, radiant heating vaporizes spilled fuel more readily and could cause explosive concentrations. It is also expensive ($1.25 a square foot). Suspended units cost about 25 percent more than a comparable hot air system, and the heat tends to stratify. Infrared rays, which heat the first opaque substance they hit, also contribute to explosion danger; in addition, they are unreliable in windy areas. Split systems – using two or more types – might be desirable in very cold areas but generally offer no benefits in keeping with their increased installation costs.

There was no attempt made to offset an open door heating loss; even with moderate winds there is no way to keep a hangar warm in winter if the doors are open. A hot air system gives fairly good heat recovery after the doors are closed. A hot air curtain across the door opening was felt to be of questionable value and would increase heating system installation and operating costs. Hot air heating also was found to be most economical for shops and offices. Indirect-fired systems should have ducts sized for possible future installation of air conditioning in those areas.



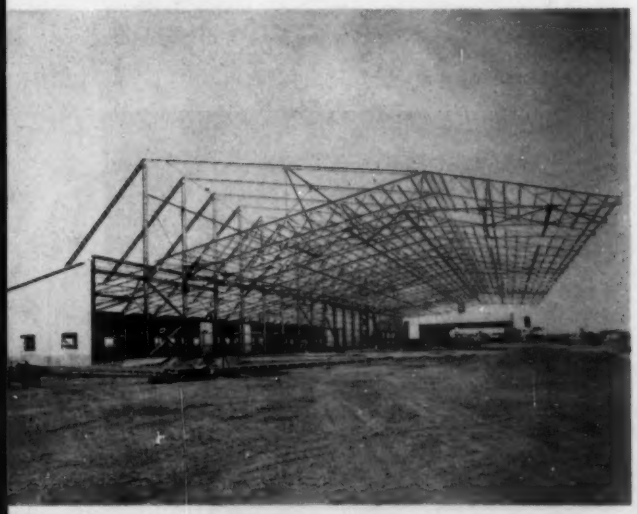
Giant double cantilever American Airlines hangar, 750-ft long and 288-ft wide, can house ten jets. Severud-Elsted-Krueger were structural engineers.

At least two consulting firms have specified radiant heating for two new hangars. St. John, Platt & Carlson, consulting engineers of Buffalo and Binghamton, New York, installed radiant floor panels in the 34,000 sq ft Broome County Airport hangar. This system, they claim, will warm the hangar interior as soon as the doors are closed, even in severe winter weather.

M. P. Zacharius & Associates are teaming radiant floor slabs with high-bay industrial heaters in the new $5-million Seaboard and Western Airlines hangar at New York International Airport. This split system is fed by three boilers with 23-million Btu capacity generating 260 F water. A special system keeps hangar door tracks free of ice and snow.

Lighting Systems

Hangar lighting usually is based on a 277/480 volt system using either fluorescent or mercury vapor lighting units. A lighting level of about 30 footcandles on the hangar floor is required. Fluorescent system operating costs are low but the initial installation costs are high; a single unit 1000 watt mercury vapor lamp is cheapest to install. However, since mercury vapor lighting requires from 5 to 8 minutes to reach maximum output, a small standby incandescent system should be installed and would operate on 120 volt emergency power. Mercury vapor lighting was specified in the Seaboard and Western hangar.



Suspended cantilever hangar designed by firm of Strobel & Rongved is 435-ft long and 120-ft deep.

Fueling

Satellite area at San Francisco airport contains tanks, pumps, fuel filters, water eliminators.

JETS USE enormous amounts of fuel. Exact quantities vary from aircraft to aircraft, but the biggest jets require about four times as much fuel as the largest piston engine craft currently in service.

This is a problem for airports, for the familiar gasoline tank trucks cannot feed the jets fast enough. The biggest trucks carry about 5000 gallons, while the intercontinental jets need over 20,000 gallons at a single fueling. With a maximum of four fueling points (some new jets have only one), the trucks themselves would have to be refueled or replaced before the plane was filled. This means extra ground time, and ground time is one thing jets cannot afford. Therefore, airlines want to land the plane, discharge passengers and baggage, refuel, load new passengers and baggage, and leave without delay. United figures its planes should take off 30 minutes after they land; American optimistically aims at 20 minutes.

While fuel trucks with greater capacity (8000 gallons) are on the way, these trucks are a dangerous nuisance. The conglomeration of trucks huddled around the airplane is a fire and collision hazard. (One airline estimates collisions between mobile equipment and its planes cost $1 million annually.) However, trucks are versatile. They can fuel planes anywhere, and can be rapidly changed to different grades or brands of fuel. To service more planes, additional tank trucks can quickly be brought into use. They will continue to have their place.

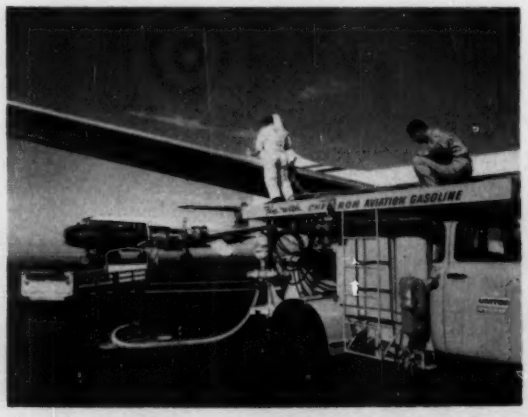
Underground Systems

Larger airports are installing underground fueling systems which require fewer men, are less expensive to operate, mean greater fueling speed with almost unlimited quantities of fuel available, and have delivery rates high enough to meet critical time schedules.

An underground pipeline system carries fuel from the storage area to servicing points on the runway apron. Jack L. Staunton, New York consulting engineer, uses welded steel pipelines, asphalt-coated. He also specifies cathodic protection for extra protection against corrosion.

Early fueling systems used water displacement to move gasoline through the hoses; water was pumped into gasoline storage tanks, pushing the lighter gasoline out. But this method is too slow. Present fueling systems generally use high-capacity pumps, but a variation of the displacement system, using nitrogen under pressure, may supplant pumps at some major fields.

At the apron service areas the pipelines terminate in pits or hydrant systems. A pit has the hoses, meters, valves, controls, and filters in a dugout below the runway level. Pits are expensive, require heavy covers, are prone to water leakage, and limit fueling to a radius the length of the hose.



Fuel comes from hydrant under pressure, goes through hose to metering cart, then to plane tanks.

Hydrants (pipeline valves set flush in the apron) are more satisfactory and cheaper. Carts (self-propelled, towed, or moved by hand) carry hoses, meters, filters, valves, water separators, and even ladders for wingtop fueling. One end of the hose connects to the hydrant, the other to the plane. Fuel is pumped from the pipeline through the hydrant cart into the plane.

Typical Projects

An excellent example of a hydrant fueling system is the one at San Francisco International Airport. This system delivers fuel fast enough to fill any jet in 20 minutes. System pressure is automatically cut to zero when no planes are being fueled, drastically reducing fire and explosion hazards.

The heart of this system is the satellite tank area. Here 200,000 gallons of fuel (supplied from a bulk storage area) are ready to meet emergency or peak delivery requirements. The satellite area has eight 400-gpm pumps to service 19 hydrants. A push-button at a hydrant starts a pump. If 400 gpm is not fast enough, additional pumps can be turned on. If fuel delivery to a plane is stopped momentarily, pumps continue running but fuel pressure in the system drops to zero. If delivery is not resumed in 15 minutes, a time-delay switch automatically shuts off the pumps.

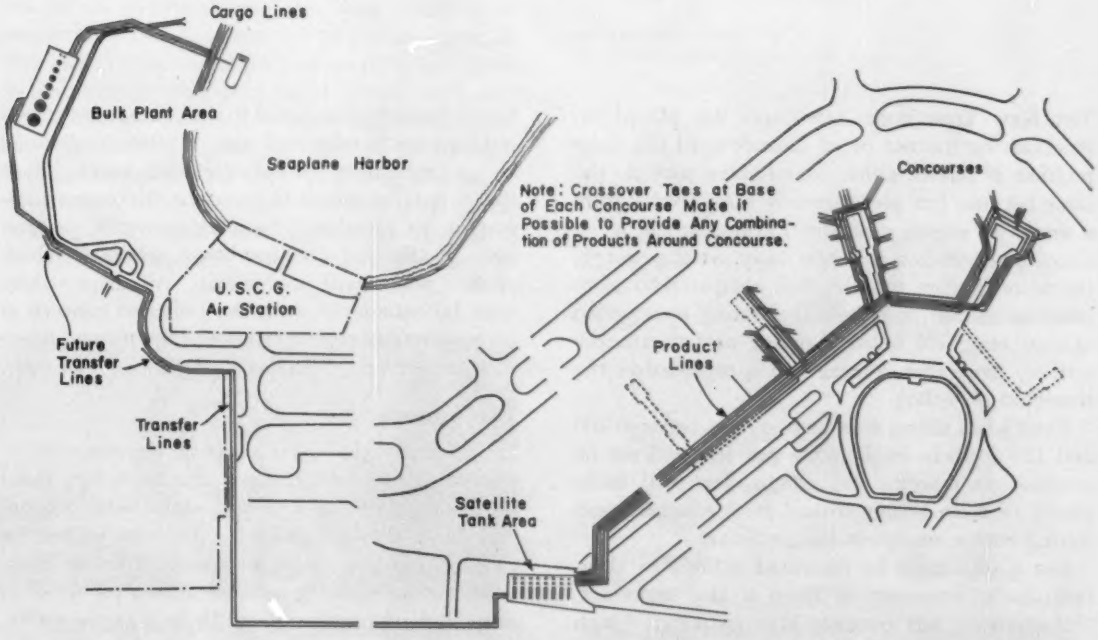
Two pipelines, each 9300-ft long, carry the fuel from the 1.5-million gallon bulk plant to the satellite tank area. Additional pipeline sections have been laid underneath roads and runways to meet future needs with minimum connection troubles. Transfer pumps (150 gpm), controlled from the satellite area, push the fuel through these pipelines. Fuel for the bulk plant comes by barge from a refinery across San Francisco Bay.

Another example is the $5.5-million storage-hydrant system for Chicago's O'Hare Field designed by James P. O'Donnell, consulting engineer. Fuel will be pumped from a 3.75-million gallon bulk plant through underground lines to satellite tanks, then through underground lines to hydrants on airline apron areas.

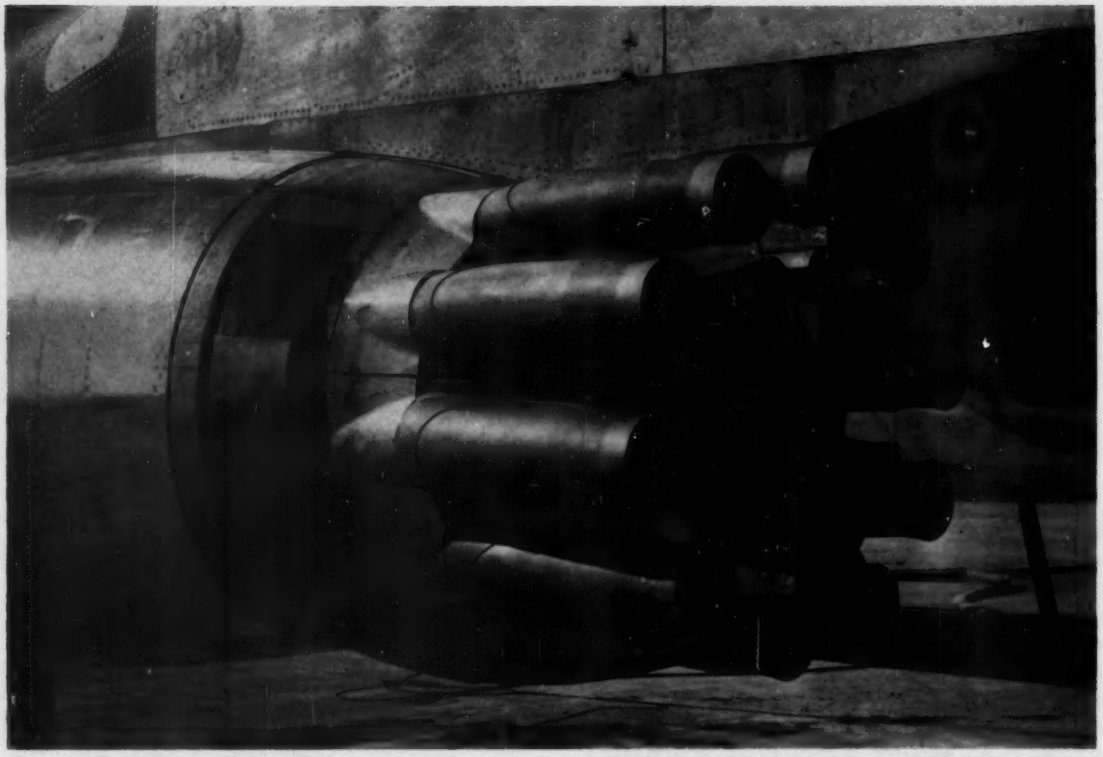
However, hydrant systems also have drawbacks. Planes must be fueled at specific points or else excessively long hose must be used. Any change in apron fueling points means costly reconstruction and engineering expenses.

For fueling the smaller jets, tank trucks still may be the solution if the fueling can be handled by two trucks in about 20 minutes. Even where pipelines are used for fueling, trucks are best for defueling, since they can take large quantities of fuel fast.

For airports with only a few flights requiring large quantities of fuel quickly (say, one flight a day) the best solution is a small high-capacity hydrant system at one point on the apron, with trucks for other fueling requirements.



Fuel for San Francisco airport comes from barge (upper left) to satellite tanks, then to hydrants on concourse.



Boeing designed this noise suppressor for its early 707 aircraft. Thrust reverser is forward of suppressor.

Noise

THE NEW YORK PORT AUTHORITY has placed restrictions on the use of jet aircraft until the noise problem is solved. Other communities may do the same because jets are extremely noisy. Noise from a single jet engine measures 130 decibels 200 feet away; 80 decibels a full mile away. At close range, the noise is more intense. And compared to more common sounds, a 110 decibel rating is regarded as deafening; 120 is like standing next to a heavy artillery piece that is firing and is regarded as the threshold of feeling.

Even when idling, a jet engine rates between 100 and 110 decibels, so the noise problem will not be confined to takeoffs and climbs. Jets will make plenty of noise taxiing to and from terminals and during engine runups at hangar areas.

But noise cannot be measured entirely by decibels; audio frequency of noise is also important. Unfortunately jets combine high frequency (high pitched) noise with the thundering sound of thrust. Sound intensity, compared to the characteristic lower frequency rumble and roar of piston engines, is higher throughout the entire audible range (20 to 10,000 cps) as shown in the chart. Even more important, jet sound will be more annoying, particularly at idle and taxi conditions where the high pitched whine will predominate. All these factors must be considered, with the principal concern at an airport centered around the frequency range most important to human speech (300 to 5000 cps).

Two Answers

To overcome the noise problem jet manufacturers and airlines have two answers. First, they claim the noise is not as bad as people hear. Second, they have incorporated noise suppressors for the engines and are developing more efficient ones, and they are working on noise fences for terminal areas. But suppressors give little or no noise reduction when the plane is idling or taxiing, meaning

they are ineffective when the plane is near the terminal. Airline personnel forced to be near the jets will have to wear earplugs or muffs. But patrons and visitors will not easily take to wearing earmuffs and conversing in sign language.

Terminal Design

Consulting engineer A. C. Pietrasanta, of Bolt Beranek and Newman Inc. (Cambridge, Massachusetts), feels the noise problem at jet terminals is bad now and will get worse. Present noise suppressors soon will be outmoded as bigger planes use bigger (and noiser) jet engines. Though planes will take off some distance away from the terminals, they will be taxiing and idling right outside the terminals for 3 to 5 minutes during each arrival and departure. At a moderately busy airport with several aircraft entering or leaving the terminal area every hour, the noise will be almost continuous.

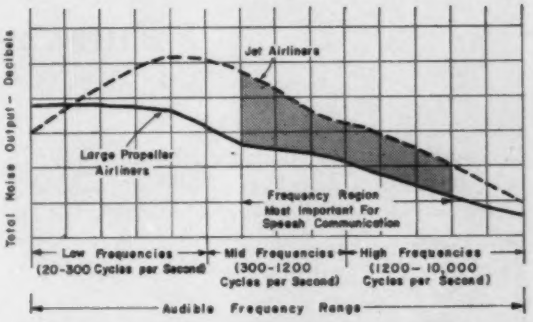
Glamorous new terminal designs sparkle with large glass areas overlooking the runway aprons so visitors can see (and hear) what is happening. Unfortunately, glass is a poor acoustic insulator. Where aircraft taxi within 200 feet of the terminal, a single glass wall a full half-inch thick will not be enough. Pietrasanta suggests double glazing with two ¼-in. thick panes set in resilient gaskets, with a 6-in. minimum airspace between. This will cut the noise level 30 to 65 decibels.

Acoustical Factors

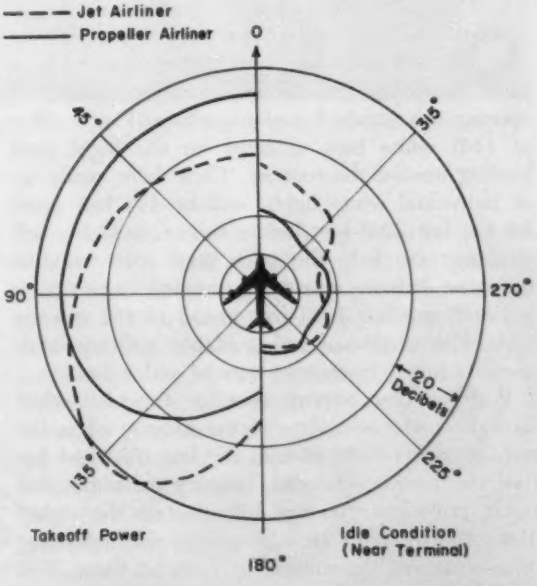
However, Pietrasanta says "airtight construction will be an acoustical must. No leaks or cracks or penetrations can be permitted in the structure, as they will vitiate soundproofing qualities of heavy or double-wall structures. Light curtain wall construction, roller curtain doors, and lightweight glazing will not be adequate for areas in the terminal near any exposed wall. Double glazing and heavy construction will be required in many parts of the building. Throughout the finger areas as well as the terminal building, extensive application of sound-absorbing material will be required to reduce the interior noise levels."

Consultants can screen ticket areas, telephones, offices, and other areas from exposed walls by using interior walls or concessions stands as sound screens and buffers. Yet these stringent requirements give only minimally adequate communication conditions; you converse by shouting.

A better solution, says Pietrasanta, is to bring the jet plane to the terminal area by tow trucks or moving "sidewalks." Or leave the plane a half-mile out, load the passengers and baggage on buses and take them to the plane. This is done in most European airports now. Both arrangements would allow terminal buildings to be designed for conventional (and cheaper) construction.



Noise of a jet compared to a large piston engine airliner (curves from Bolt Beranek & Newman)



Directional noise pattern for jet and piston engine airplanes (curves by Bolt Beranek & Newman)

First American jet to go into commercial service, the 707 carries noise suppressors on each engine.

Runway edge lighting at Washington airport uses 272 fluorescent lamps to make two 1400-ft. ribbons of light.

Runway Lighting

C. EDWARD WALTER, design engineer with Whitman, Requardt & Associates (Baltimore) and MIT professor Vincent J. Roggeveen point out that approach and runway lighting have these functions:

¶ Help the pilot find the airport, distinguishing its lights from other lit areas.

¶ Help him locate the correct runway.

¶ Help him align the plane longitudinally and laterally with the runway.

¶ Tell him where the runway starts.

¶ Tell him where the runway centerline is.

Approach lights guide the pilot to the runway and help him align his plane. Although there have been confusing systems of approach lighting, it appears the standard configuration will be a series of 14-ft white bars centered on the flight path leading toward the runway. These bars, made up of individual white lights, will be 100 feet apart for the last 3000 feet before the runway. For roll guidance (to help the pilot keep both wingtips the same distance above the ground) there also is a 100-ft crossbar 1000 feet ahead of the runway edge. For additional roll guidance military fields use additional transverse bars of red lights.

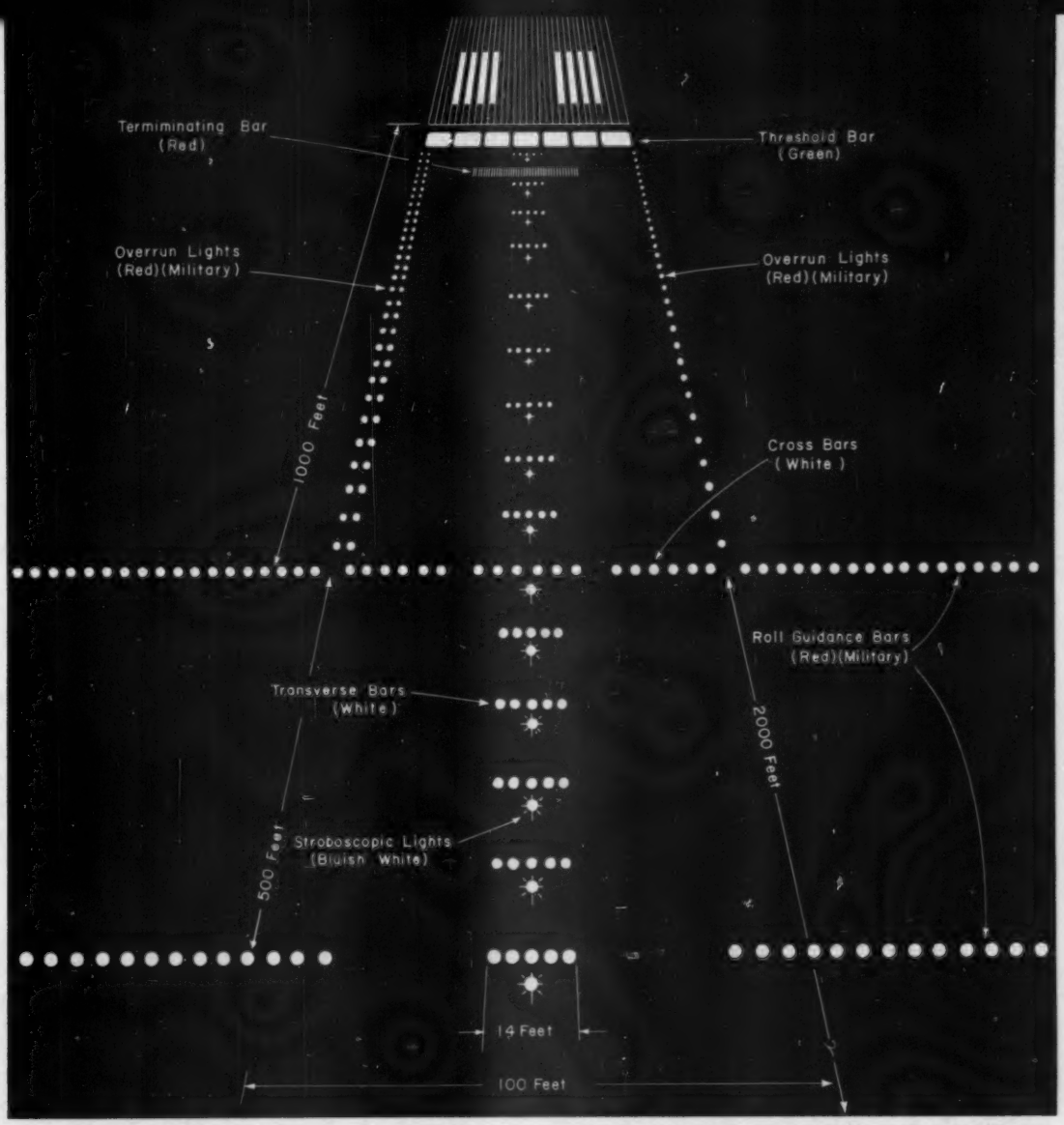
While civilian airports continue the 14-ft white bars down the centerline to the runway edge, the military omits these bars in the last 1000 feet before the runway. Instead, military fields use red lights (two rows on the left, one on the right) along the shoulder areas so planes undershooting or overrunning the runway will not hit them. This conflict between the civil and military systems probably will be solved by general adoption of flush-mounted Elfaka lights. Developed in The Netherlands, these lights are strong enough to take the landing impact of a heavy bomber. And level with the ground, they cannot possibly endanger an airplane. It appears the centerline approach lighting pattern of the CAA will be standard.

An important new addition to approach lighting is the stroboscopic light used just ahead of the transverse bars. Flashing in sequence these "EFAS" lights look from the air like brilliant fireballs streaking toward the runway twice a second at 3600 miles an hour. Although intense (30-million candlepower), the lights flash for such a brief instant (1/5000th of a second) the pilot is not blinded during his approach.

Another system under test is an angle-of-approach light which appears yellow to the pilot if he is too high, green if he is on the correct glide path, red if he is too low. Student pilots make better night landings using this lighting system than they do in the daytime.

Threshold lights show the pilot the runway limits. The trend appears to be green flush-mounted Elfaka lights across the full width of the runway.

Once the pilot is over the runway, ready to touch down, his problems are not over. Beacon-type lights along runway edges produce a "black hole" effect. As the pilot nears the ground, these edge lights appear to move farther apart and upward, while the runway appears to be a bottomless pit. More intense lights along the runway edges will not help because the problem is primarily one of human eyesight limitations.



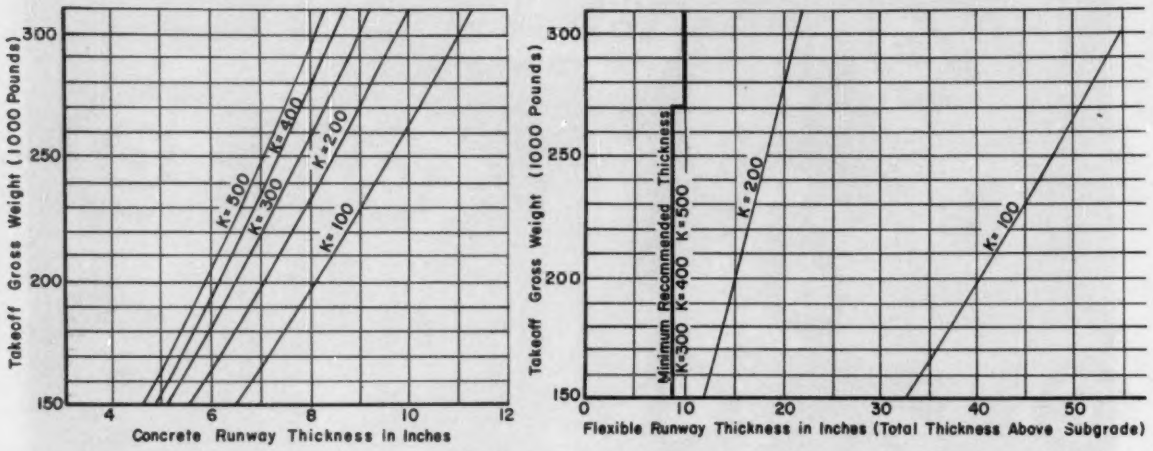
CAA approach lighting for civilian airports. Combined civil-military fields will add lights marked "military."

Two solutions are under study. Elfaka flush-mounted lights spaced 30 or 45 feet on each side of the runway centerline erase this black-hole effect. High-intensity fluorescent lights placed along the runway edges are under test at Washington National Airport. These luminaires show pavement texture without glare and ease pilot tension.

Airport officials are understandably reluctant to tear up existing runways to add Elfaka lights, but Elfakas will be standard on new runways. Fluorescent edge lights are easier installed.

High-speed runway turnoffs require special lighting. For identification, blue lights indicate turnoffs. (Blue also is used for taxiways.) At the Indianapolis airport, Clyde E. Williams & Associates have installed a flashing blue light 500 feet up the runway from each turnoff to alert the pilot. If plane speed is low enough, the pilot can use that turnoff. If he is going too fast, he can wait for the next one. Blue Elfaka lights lead from the runway centerline to the turnoff centerline.

Unfortunately, blue is hard to see at night. And when the plane is on the ground the pilot, guided only by strings of blue lights, often has trouble finding the right taxiway. Because he may be miles from the terminal with only a vague idea of the safest or best route, airports now are installing lighted signs to guide pilots to ramps, runways, hangars, and terminal areas; signs much like those on the new superhighways.



Thicknesses for flexible and rigid runways; typical K value is 200 lb per cu in. for compacted subgrade natural earth.

Runways

JETS NEED longer runways, wider runways, thicker runways. They also need larger aprons and concourses to handle their increased passenger and maintenance requirements. Some airports also will need additional runways to handle the increase in air traffic. Because many metropolitan airports are hemmed in by residences, highways, and industrial areas, it will take good engineering to cram more runways, longer runways, larger buildings, and more service aprons into the same area.

Trends in Runway Pavement

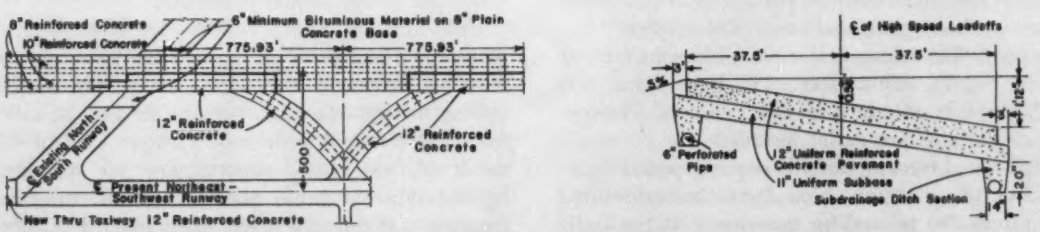
As in highway construction, there is a running battle between proponents of flexible and rigid pavement for runways. The air force has long been a rigid-pavement partisan, specifying only concrete for critical areas. While true that heat from jet afterburners and jet fuel spillage on tar runways has deleterious effects, tests show an asphalt runway may have some advantages. When a heavy plane comes down on too thin a concrete runway the concrete disintegrates into gravel. One solution is to make the concrete runway thicker—2- or 3-ft deep. But a too-thick concrete pavement can contain internal fractures resulting from temperature differences between the top and bottom of the slab.

Prestressed or reinforced concrete runways are expensive but stand up well when the subgrade is strong enough to take the load. A comparatively thin layer of prestressed concrete designed by Freyssinet is used at Orly (Paris) and London airports and has proven satisfactory.

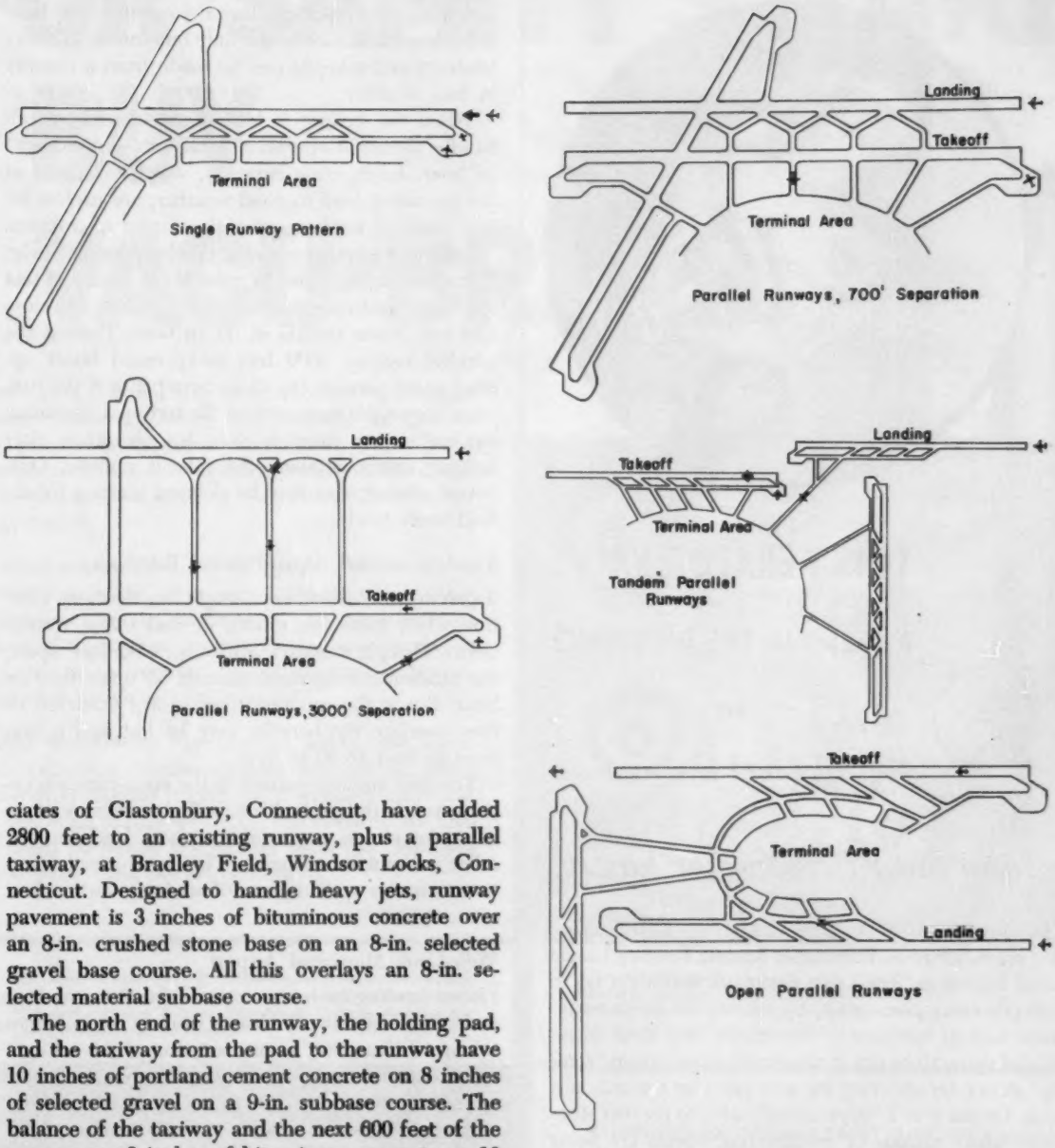
Water-Filled Rubber Bags

For certain areas where subsoil is poor, British civil engineer David Williams suggests that thin concrete slabs be laid over water-filled rubber bags, spreading the weight over a large surface area and reducing the force of a heavy jet landing to just two psi. Individual concrete slabs would move, absorbing the landing force without breaking. Any broken slabs could easily be replaced. There are drawbacks, the chief being cost. Rubber bags 20 feet square would be expensive. They could be justified only where conventional construction would be even dearer or where without a water-bottle runway there could be no runway at all.

Consulting engineers John J. Mozzochi and Asso-



High-speed turnoffs at Indianapolis airport let airplanes swing off runway onto taxiway at 60 miles an hour.



A comparison of runway configuration patterns.

ciates of Glastonbury, Connecticut, have added 2800 feet to an existing runway, plus a parallel taxiway, at Bradley Field, Windsor Locks, Connecticut. Designed to handle heavy jets, runway pavement is 3 inches of bituminous concrete over an 8-in. crushed stone base on an 8-in. selected gravel base course. All this overlays an 8-in. selected material subbase course.

The north end of the runway, the holding pad, and the taxiway from the pad to the runway have 10 inches of portland cement concrete on 8 inches of selected gravel on a 9-in. subbase course. The balance of the taxiway and the next 600 feet of the runway use 3 inches of bituminous concrete on 10 inches of crushed stone base over 8 inches of selected gravel base course on 6 inches of selected material subbase course. The taxiway shoulders and a 200-ft blast strip at the north end of the runway have 2 inches of bituminous concrete covering 6 inches of selected gravel base course.

Honolulu International Airport

Honolulu International Airport uses coral as a subbase for asphalt and concrete runways and aprons. Chief engineer J. N. Sparling, of Quinton Engineers, Ltd., Los Angeles, designed terminal aprons with 10 inches of rigid pavement over a 24-in. coral subbase or 3 inches of flexible pavement over a 24-in. coral subbase on a 9-in. rock base. Taxiways and holding aprons have 5 inches of asphaltic concrete atop 48 inches of coral subbase and 9 inches of rock base.

Runway Configuration

While runway length and thickness determine the maximum size plane that can use an airport, runway configuration determines airport capacity under instrument-flying conditions. To prevent tiring

and dangerous stacking, airport capacities will have to be increased. Generally, only one-fourth as many landings and takeoffs can be made from a runway in bad weather.

When the ceiling is low, a single runway can handle about 30 operations (takeoffs or landings) an hour. Intersecting runways, which take part of the operating load in good weather, are useless for instrument flying because of the danger of collision.

Adding a parallel runway nearby does not help. For visual flying runways must be at least 700 feet apart; for instrument flying this is much too close and operations remain at 30 an hour. Putting the parallel runway 3000 feet away could boost operations 50 percent (to 45 an hour). But if the runways are on the same side of the terminal, incoming air traffic may have to wait for clearance after landing before crossing the takeoff runway. Outbound aircraft also may be delayed waiting for infield traffic to clear.

Tandem-Parallel, Open-Parallel Runways

Tandem-parallel runways might be the best solution when there are terrain or real estate restrictions. Though runways are only 1200 feet apart, the tandem arrangement permits 55 operations an hour. But if the tandem runways are extended so they overlap, the benefits may be lost and operations go back to 30 an hour.

The best runway pattern is the open-parallel, experts say, with terminal buildings between. A plane can take off on one while a plane lands on the other without interference. This open-parallel system increases operations to 65 an hour—better than one a minute.

Weir-Cook Municipal Airport

Planes landing in bad weather take three or four times as much time to clear a runway as do planes taking off. One way to get incoming planes off runways faster is through the use of high-speed turnoffs leading to the apron.

At the Weir-Cook Municipal Airport in Indianapolis, consulting engineer A. W. Compton, of Clyde E. Williams and Associates, has designed the first superelevated turnoffs for a U.S. airport. Planes can turn off the runway at 60 miles an hour, significantly increasing runway capacity and, in effect, adding additional open-parallel strips. These banked turnoffs have a 955-ft radius with inner edges 1.12 feet below the outer. Actually, the turnoffs are not superelevated, but depressed, for the high side is at the same level as the runway.

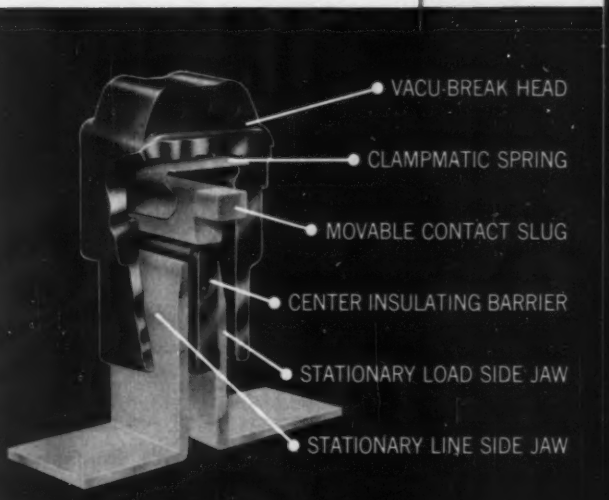
Engineering of the 150-ft wide runway at Indianapolis was otherwise straightforward. Built in six 25-ft wide lanes, the runway has 750-ft long sections at each end of foot-thick wire-mesh rein-

FOR SAFETY'S SAKE BUY VACU-BREAK

There's a big difference in safety switches—a difference between maximum safety and halfway safety—low maintenance and excessive maintenance. These differences are readily apparent when you look at the design and operation of the BullDog Vacu-Break Clampmatic* Safety Switch.

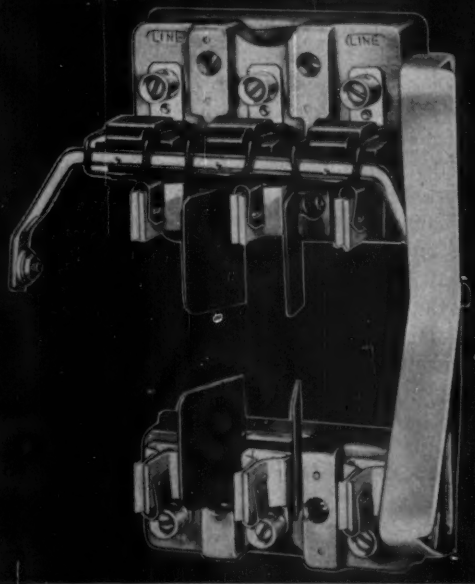
THE VACU-BREAK: Contacts are housed inside compact arc chambers which have very little air space. When contacts are "broken" under load, arcs can't build up because of the lack of oxygen. Pitting and burning of the contacts are reduced to the absolute minimum. Maintenance is virtually eliminated.

POSITIVE SWITCHING: For positive safety, the Vacu-Break switching mechanism does not rely on tricky toggles or springs to trigger the disconnect operation. The operating handle is directly connected to the contact heads by means of a sturdy *metal* rod. Push the handle "OFF" and the switch *is off!*



Vacu-Break heads are connected directly to the switch handle. No toggles or triggers . . . no tricky springs. No danger of switching failure, either. One of several exclusive BullDog Vacu-Break features that set the performance standards for the industry.

Close-up of Vacu-Break head shows movable contact slug inside the compact, oxygen-limiting arc chamber. Clampmatic spring assembly assures bolt-tight contact, speeds "break". This combination guarantees positive, safe operation, long switch life.



WITHSTAND 100,000 AMP FAULT CURRENT: Vacu-Break Clampmatic switches equipped with current-limiting type Amp-Traps** were subjected to 100,000 amp short circuit current. *The switches were undamaged.*

Play it safe! Compare, recommend, *buy* . . . BullDog Vacu-Break Clampmatic Safety Switches. They cost no more than other switches . . . yet give you the maximum in safety and performance. © BEPCO

**Vacu-Break and Clampmatic are registered trademarks of the BullDog Electric Products Company.*
***Amp-Trap is a registered trademark of the Chase-Shawmut Company.*

BULLDOG

BullDog Electric Products Company, Division of I-T-E Circuit Breaker Company, Detroit 32, Michigan. *BullDog Export Division:* 13 East 40th Street, New York 16, New York. *In Canada:* BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Rd., Toronto 15, Ont.

forced concrete on an 11-in. gravel base course compacted to 95 percent laboratory density (equal to 130 lbs per cu ft). The four center lanes of the remaining 5800 feet are 10-in. concrete slabs over a 10-in. gravel base, with the two outside lanes using 8-in. pavement over an 8-in. gravel base.

Under one 3000-ft runway section engineers found a perched water table at artesian pressure. Before the subgrade could be consolidated for fine grading and shaping, perforated metal pipe had to be installed 4 feet below the subgrade elevation to draw off this water. For ground-level drainage, the runways and turnoffs have 6-in. perforated pipe set 20 inches under the base course at each edge of the turnoff and taxiway pavement and 23 feet inside the edge of the main runway.

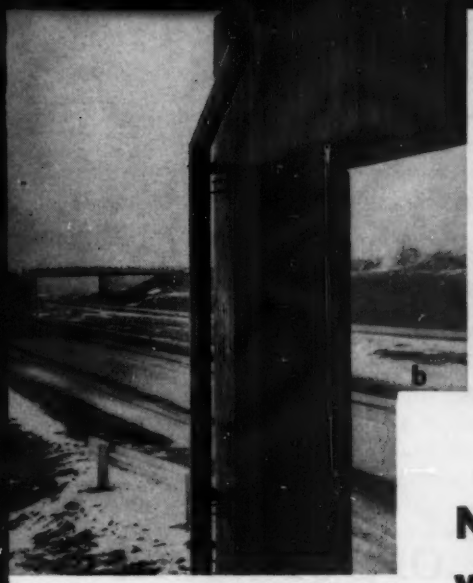
Surface Drainage Systems

R. S. Freeman, engineer at Seelye Stevenson Value & Knecht of New York, points out that steep drainage ditches and headwalls should not be constructed near runways because of the hazard to aircraft. Proper surface drainage systems can almost eliminate costly subsurface systems. Drains carrying both surface runoff and subsurface water flows are not recommended under runways and aprons because the subsurface area can become water-saturated during storms. Besides these drains soon fill up with silt. Stone-filled ditches can be used for a temporary system, but are not good for permanent use. They clog rapidly. Runways built in northern regions should always have frost-susceptible subgrade soils removed.

Oakland Airport

At the new Oakland Airport, R. E. Layton & Associates (San Leandro) have a real drainage problem. Additions to the airport will be built on 1460 acres reclaimed from San Francisco Bay, bounded by a perimeter dike and covered with hydraulic fill. To remove storm drainage waters during construction and after the airport is in use, Layton has run 3-ft diameter corrugated metal culverts through the dike with tide gates on the Bay side.

Layton plans to use eight areas of the airport as water collectors after the dike is finished. Since he hopes the mud base of the airport will be impervious to water seeping in from the Bay, he specified a 5000-gpm pumping system which has enough capacity to remove the sea water left in the area after the dike is finished, and thereafter cope with ordinary rainfall. To handle any emergency (like a breach in the dike) Layton recommends two 10,000-gpm pumps. These, he feels, could clear the airport runways after a bad storm or breach in the dike, taking from a day and a half to 50 days, depending on the amount of water. ▲▲



New 4-D Wrought Iron combines workability with increased corrosion resistance in these highway services

a 4-D Wrought Iron railings offer high impact resistance because of their great structural strength. Easy to work and easy to weld, 4-D Wrought Iron railings stand up well in corrosive atmospheres.

b 4-D Wrought Iron drainage lines assure uninterrupted service—so essential in keeping high-speed traffic lanes open. No costly maintenance or repairs with this durable piping material on the job.

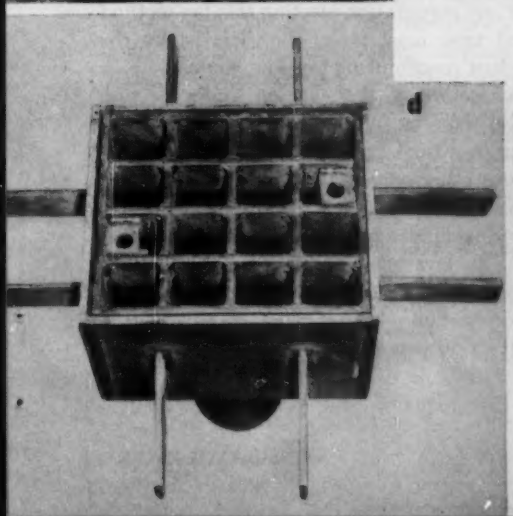
c 4-D Wrought Iron snow-melting systems like the one on this bridge ramp, combine corrosion resistance with rugged strength, low coefficient of expansion with concrete, and easy fabrication properties.

d 4-D Wrought Iron scuppers serve as low-cost catch basins in bridge drainage systems. Cindering and salting and alternating wet and dry conditions have proved relatively harmless to this rugged material.

e 4-D Wrought Iron curbing preserves concrete against icing salts, brine slush, drainage water and corrosive atmospheres. 4-D Wrought Iron's resistance to corrosion stems from a unique structure of glasslike iron silicate fibers. Write for booklet, *Wrought Iron in Highway Construction*. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS 4-D WROUGHT IRON

TUBULAR AND FLAT ROLLED PRODUCTS



A new Federal regulation permits small corporations to elect to be taxed as though they were partnerships or sole ownerships. This will mean big income tax reductions for many consulting engineers. But you must act now.

Lower Taxes for Small Corporations

CARL H. RISTAU
Certified Public Accountant

A FIRM OF CONSULTING ENGINEERS has many factors to weigh in deciding whether to operate as a sole ownership, a partnership, or a corporation. In some states there is no choice, for the state registration law may forbid corporate practice.

CE exclusive

There is a trend, however, toward incorporation where the law allows, for there are a number of advantages such as participation in pension plans and other fringe benefits not available to sole owners or partners. For these and other good reasons, some engineering firms have incorporated even when it meant an increase in taxes. There are other firms that would like the advantages of incorporation but do not feel they can afford the higher income tax they would have to pay.

Now, so far as taxes are concerned, all this has changed. You can make your decision as to your method of conducting your practice without consideration of tax consequences.

New Tax Law Provision

There is a new tax law provision that permits any corporation meeting certain qualifications to elect not to be taxed as a corporation—and many consulting firms can meet these qualifications.

The implications of this new approach are far-reaching and should be studied whether you are presently incorporated or not, for now you can enjoy all the benefits of a corporate form of business and be taxed as though your firm were a sole proprietorship or partnership.

Any domestic corporation, not a member of an affiliated group, qualifies if it:

¶ Has fewer than 11 stockholders
¶ All stockholders are individuals or estates
¶ No stockholder is a nonresident alien
¶ Only one class of stock is outstanding

The Small Business Corporation

Such a corporation is known as a small business corporation. For it to be taxed as an unincorporated business, Form 2553 must be filed, and all stockholders, on the day they elect this tax method, must give their consent in writing.

This election may be made only with respect to a taxable year beginning after December 31, 1957 and ending after September 2, 1958. For all existing corporations whose taxable year began January 1, 1958 or later, the election, to be currently effective, must be made by December 1, 1958, or on or before the last day of the corporation's taxable year, whichever is earlier. The election becomes effective for all succeeding taxable years unless terminated under Section 1372(e). Any new corporation or any corporation electing this tax method for the first time must make the election by the end of the first month of its taxable year.

While revocation of the election under Section 1372(e) also must be made within the first month of the year in which revocation is desired, there are numerous other ways to terminate the election. Termination at any time will result if:

¶ Any new stockholder fails to consent to the election within 30 days after becoming a stockholder
¶ The corporation no longer qualifies as a small business corporation
¶ If more than 80 percent of its gross receipts are

from sources located outside the United States.
¶ If the corporation has more than 20 percent of its gross receipts derived from royalties, rents, dividends, interest, annuities, and gains from sales of stock or securities

If a corporation revokes the election, no reelection may be made within five years without the consent of the Commissioner of Internal Revenue.

How It Works

The tax effect of this new provision is to require each stockholder, on the last day of the corporation's taxable year, to include his proportionate share of the corporation's current taxable income with his own return. He is deemed to have received this income on the day upon which the corporate year ends, whether the amounts actually were paid or not. This income is not eligible for the dividend received credit and is treated as ordinary income. The general exception is that capital gains carry over their special features to the individual stockholders.

Example: a calendar year corporation has three equal stockholders who also report on the calendar year basis. The corporation has undistributed taxable income of $30,000 for 1958, and it paid no dividends. The corporation will pay no tax in 1958, and each of the individual stockholders will include $10,000 in his 1958 tax return although the income distribution actually may not have been paid.

To compute undistributed taxable income certain technical adjustments must be made.

1. The following items must be restored to corporate income:

¶ Operating loss carryover
¶ Partially exempt interest
¶ 85 percent dividends received from certain foreign corporations
¶ Dividends received on certain preferred stock of public utilities

2. It is necessary to subtract cash dividends paid out of the current year's earnings during the particular taxable year.

Note that a dividend in kind does not reduce undistributed taxable income nor does a cash dividend out of prior accumulated earnings.

Example: An electing corporation has $40,000 of retained earnings on December 31, 1957. The 1958 income is $15,000 and a cash dividend of $5000 and a dividend in kind of $5000 have been paid. There are two equal stockholders. Each would include in his income:

¶ $2500 as a regular dividend, not eligible for dividends received credit
¶ $5000 of undistributed taxable income not eligible for dividends received credit
¶ $2500 as a dividend eligible for dividends received credit, since it is a noncash dividend out of prior earnings

The amount a stockholder has been taxed upon as his share of corporate earnings but not actually received by him may be distributed by the corporation in a subsequent year with no further tax required of the stockholder. If the corporation has retained earnings prior to the year of election and all subsequent earnings have been distributed to the stockholders, further distributions must be deemed to be out of pre-election earnings and are taxable to the stockholders.

It is recommended that two corporate retained earning accounts be instituted so that proper records can be maintained to show those earnings that may be distributed without further tax.

Deferring or Accelerating Tax

It is possible to defer or accelerate the tax on this income if the corporation has or decides to adopt a fiscal year.

Example: An electing corporation has a fiscal year ending January 31, with all its stockholders reporting on a calendar year. The corporations income for the year ending January 31, 1959 will be reported on the stockholders' 1959 returns although most of the income was earned in 1958.

The stockholders will not finish paying their tax on this income until April 15, 1960. Had the corporation not elected, it would have had to finish paying its tax by July 15, 1959. Had its year ended December 31, the stockholders would have had to report the income in 1958 and finish paying the tax by April 15, 1959.

Had the stockholders desired to accelerate any portion, they need only have paid themselves a dividend in 1958. The 1958 dividend would be included in 1958 returns, with the balance of income reported in 1959.

Capital Gains

Capital gains retain all their special features.

Example: An electing corporation with two equal stockholders, both of whom report on calendar year basis, has $2000 in capital gains and $18,000 in other income. Each stockholder reports $1000 as capital gains and $9000 as ordinary income.

A fiscal year corporation having capital gains and making a distribution by December 31, presents a situation in which the capital gains must be allocated ratably to the two different calendar years in which the stockholders must report.

Example: The electing corporation in the above example has a fiscal year ending January 31, 1959, and paid an $8000 dividend in 1958.

Since the corporation's $20,000 total income includes $2000 of capital gains, the amounts taxed

as income to the stockholders in 1958 and 1959 will be treated as 10 percent capital gains and 90 percent ordinary income. Each stockholder will report his actual $4000 1958 cash dividend as being $400 capital gain and $3600 ordinary income; the $6000 undistributed taxable income will be reported in 1959 as being $600 capital gain and $5400 ordinary income.

How to Handle Losses

An electing corporation that incurs a net operating loss for the current year passes this loss through to the stockholders. The loss serves as a reduction to stockholders' other income, and if it exceeds other income, the excess may be carried back or forward as a net operating loss carry-back or carry-over. However, no loss can be carried back to a year beginning before January 1, 1958.

A loss also can be used to reduce the basis of the stockholder's stock. He may not reduce the basis of his stock below zero; hence the maximum loss on which he can claim deductions is limited to his basis of stock plus any other indebtedness of the corporation to him.

It also follows that an electing corporation having an operating loss cannot use this loss as a carry-back or carry-over; nor can the stockholders use any loss carry-over belonging to the corporation before it became an electing corporation.

While capital gains in profitable years are passed through as capital gains to the stockholders, the same is not true in operating loss years. Any capital gains in this situation first are used to reduce the operating loss.

Capital losses, even in profitable years, cannot be passed through to the stockholders. Capital losses must remain in the corporation to be used against subsequent corporate capital gain.

Example Illustrates Procedure

An operating loss also is treated as having been incurred equally over the taxable year on a daily basis. This is important only if there has been a change in stockholders during the year. The loss would be apportioned by dividing the net operating loss by the number of days in the year and assigning it to each stockholder according to the number of shares held each day.

Example: Brown owns 20 percent of the stock in an electing corporation which has a $7300 operating loss. He sells his stock to Smith on March 31, the 90th day of the year. The total loss applicable to this 20 percent is $1460, so Brown would deduct 90/365 ($360) and Smith would deduct 275/365 ($1100).

The last day of the corporate year governs for reporting losses just as it does for reporting gains.

Yes, you can save cable dollars when you go to higher voltages!

For 15 kv and up—consider Anaconda Durasheath rubber-insulated, neoprene-jacketed power cable! Its lighter weight, flexibility of installation, ease of splicing may mean lower installed costs!

With today's trend toward higher and higher voltages, better look into the advantages of Durasheath*—Anaconda's superior-quality rubber-insulated power cable. It may mean big over-all cost savings!

New Anaconda insulating compounds, improved shielding, and advances in cable manufacturing technique have now made it practical to extend Durasheath's voltage range beyond 15 kv . . . to 25 kv . . . and to even higher voltages.

ANACONDA DURASHEATH ALL-PURPOSE POWER CABLE

Available in all sizes, single and multiple conductor, copper or aluminum, 600 to 15,000 volts and higher.

INSULATION. Type RHW, Anaconda ANW, AHW or AB rubber compounds, each designed for specific purposes.

JACKET. Specially compounded neoprene with high resistance to flame, oil, acids, alkalies, sunlight and ozone, high tensile strength and flexibility at extremes of temperatures. Densheath (PVC) and Polyethylene jackets are available for special applications.

In lower and medium voltage ranges (600 volts to 15 kv), Durasheath has already earned an outstanding reputation for safety, dependability, long life—*and* money-saving versatility. For Durasheath can be installed overhead . . . in ducts . . . and underground, in continuous runs with minimum splices. Its flexibility and light weight are important, too, in cutting the costs of supporting structures.

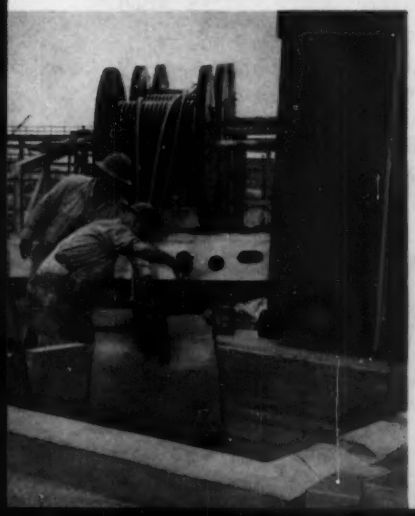
Now, Anaconda's proven "know-how" in cable construction has made it possible to bring all these advantages to *high-voltage* Durasheath cable! If you're "going up" to higher voltages, see the Man from Anaconda about Durasheath. He will be glad to help you work out your particular problem. Or write: Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York. *Trademark

E8375 Rev.

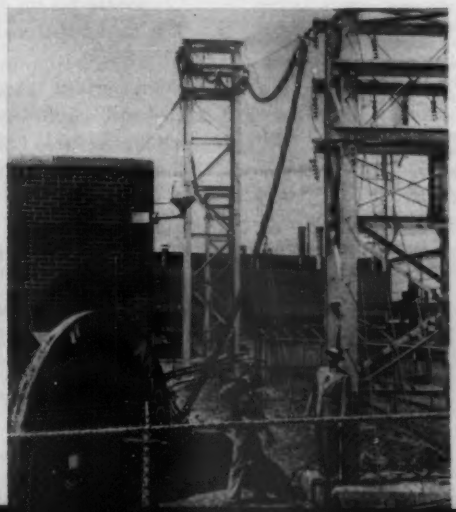
SEE THE MAN FROM
ANACONDA®
FOR DURASHEATH CABLE

Anaconda Durasheath is 3 cables in 1, because . . . it can be installed—

IN DUCTS



AERIALLY



UNDERGROUND

In the above example, if the electing corporation's year ended February 29, 1960, Brown would claim his $360 loss in 1960 even though he sold his stock March 31, 1959.

To Help You Decide

Under prior tax law you may have incorporated to effect a tax saving by spreading the income and the tax between the corporation and yourself; you may have decided against incorporation because there would have been no tax savings. Also under earlier law you knew that any corporate retained earnings could only be ultimately yours as dividends (subject to further tax to you) or by sale or liquidation, resulting also in additional tax but at the more favorable capital gains rate.

Now, under the new law, we have a different situation. Let us assume that the firm is owned equally by two men, each married and with two children. They have no income other than that from the firm. They use the standard deduction on their personal returns.

Example: Net business income is $40,000 before owners' salaries are paid. Salary of each is $12,000.

1. Doing business as a nonelecting corporation, the tax liability is as follows:

Corporate tax (30% x $16,000)	$ 4800
Tax on both stockholders' salaries (2 x $1836)	3672
Total current tax cost	$ 8472
Ultimate capital gain tax on amount left in business (25% x $11,200)	2800
Total ultimate tax cost	$11272

2. On the other hand, if the firm operates as a partnership or becomes an electing corporation under the new law:

Total tax to both owners, each taxable on $20,000	$ 8248

Alternative 2 saves $224 immediately and will save $3024 if the money remaining in the corporation is realized through sale or liquidation.

Example: Assume business income before salaries is now $100,000 and salaries are $25,000 each.

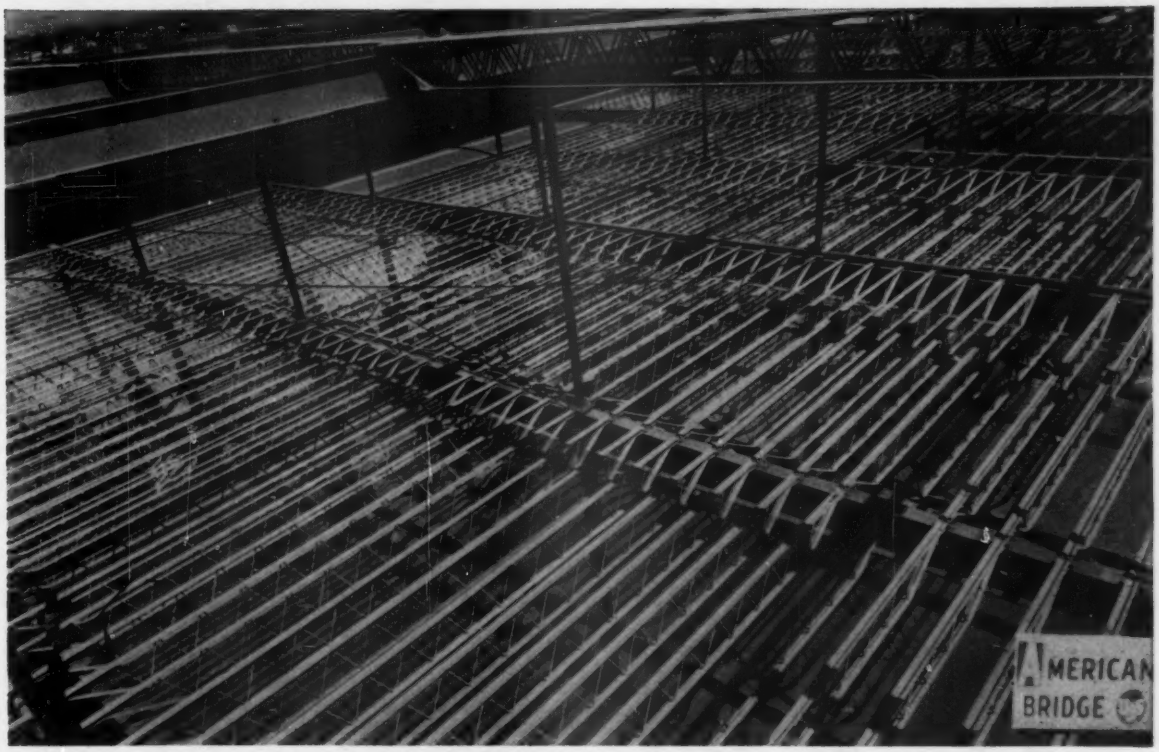
1. Doing business as a nonelecting corporation:

Corporate tax on $50,000	$ 20500
Tax on both stockholders' salaries (2 x $5888)	11776
Total current tax cost	$ 32276
Ultimate capital gain tax on amount left in business (25% x $29,500)	$ 7375
Total ultimate tax cost	$ 39651

2. If the firm is a partnership or an electing corporation:

Tax to both owners, each taxable on $50,000	$ 36588

Alternative 1 saves $4312 in current tax cost; whereas alternative 2 will save $3063 if the money

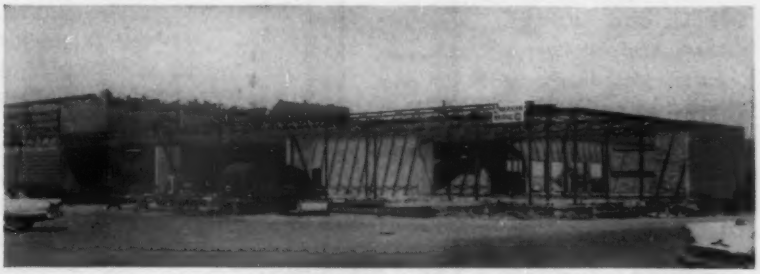


In one of Montgomery Ward's newest stores

USS AmBridge steel joists permit post-free floors

This two-story building, an addition to the Village Shopping Center in Gary, Indiana, will soon house Montgomery Ward & Company's newest store. The store will provide 122,965 square feet of merchandising space and will employ 250 people. **The builders of this store,** the Superior Construction Company, of Gary, are using 240 tons of USS AmBridge Longspan Steel Joists and USS AmBridge Standard Steel Joists for floor and roof construction. Longspan Joists permit post-free floors... allow the maximum in open-floor area for sales displays.

USS AmBridge Standard Steel Joists provide rigid, lightweight, economical construction, suitable for any type of floor, roof, or ceiling. Their underslung, open-web design allows free passage of pipes, ducts, and conduits in any direction. The ease of handling these joists cuts installation time and permits other trades to start work quickly. American Bridge also supplied the structural steel for this job.



Montgomery Ward Retail Store, Gary, Indiana; Owner: Village Shopping Center, Inc.; Designer: Frederic W. Collins, A.I.A.

FREE BOOK—To get full details on all USS AmBridge Steel Joists, send for our free catalog. This 40-page catalog contains complete design information for spans up to 120 feet. Write to American Bridge Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh, Pa. Or contact our nearest contracting office.

USS and AmBridge are registered trademarks

American Bridge Division of USS United States Steel

MEMBER CJI STEEL JOIST INSTITUTE

General Offices: 525 William Penn Place, Pittsburgh, Pa. Contracting Offices in: Ambridge • Atlanta • Baltimore • Birmingham • Boston • Chicago • Cincinnati Cleveland • Dallas • Denver • Detroit • Elmira • Gary • Houston • Los Angeles • Memphis • Minneapolis • New York • Orange, Texas • Philadelphia Pittsburgh • Portland, Ore. • Roanoke • St. Louis • San Francisco • Trenton • United States Steel Export Company, New York

remaining in the corporation is realized through sale or liquidation.

Example: Assume business income before salaries is now $200,000 and salaries are $50,000 each.

1. Doing business as a nonelecting corporation:	
Corporate tax on $100,000	$ 46500
Tax on both stockholders' salaries (2 x $20,654)	41308
Total current tax cost	$ 87808
Ultimate capital gain tax on amount left in business (25% x $53,500)	13375
Total ultimate tax cost	$101183
2. As a partnership or an electing corporation:	
Total tax to both owners, each taxable on $100,000	$102384

Alternative 1 saves $14,576 in current tax cost and will save $1201 if the money remaining in the corporation is realized through sale or liquidation.

Reviewing these three examples, you will note that as total income increases, the tax advantages of the partnership or electing corporation decreases. Also, as the number of stockholders varies, or their other outside income increases, the breakeven point changes. Each business will have to make its own computation. The important fact is that now any business legally entitled to incorporate as a small business corporation may do so and then elect the taxing method most favorable to its situation, changing its taxing method when and if a change is warranted.

Another consideration is that as a stockholder-employee of an electing corporation you will become entitled to fringe benefits not allowed to a sole proprietor or a partnership.

Examples of fringe benefits are sick pay, employee death benefits, group life insurance, health and accident insurance, medical payment plans, and qualified profit sharing and pension plans.

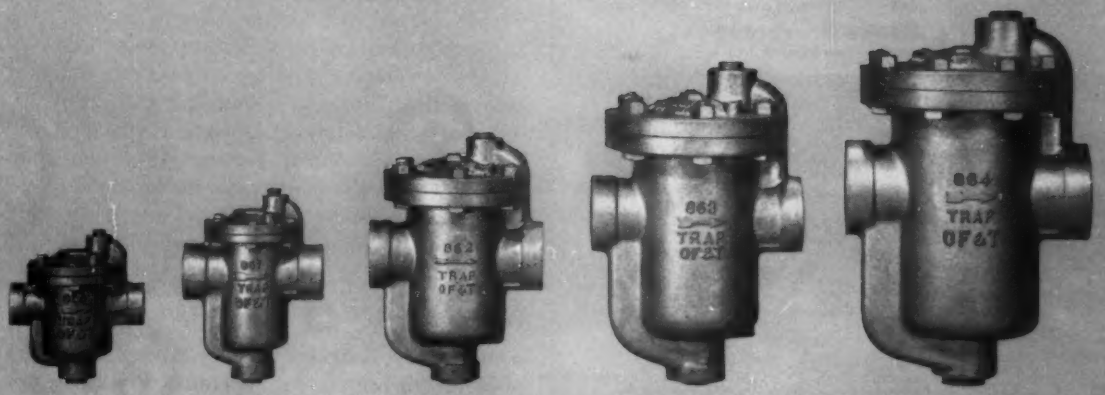
Now assume that as a partnership the two owners in the first comparative tax example already were providing their employees with all these fringe benefits except a profit sharing plan. As stockholder employees, the owners, too, will be eligible for all these benefits. Let us assume the cost is an additional $6000. A comparative recomputation illustrates:

Tax paid profit as partnership ($40,000 less $8248 tax on partners)		$ 31752
Tax paid profit as electing corporation after deducting fringe benefit cost ($34,000 less $6300 tax on stockholders)	$27,700	
Value of fringe benefits	6,000	$ 33700
Additional increase to stockholders' wealth through exercising election		$ 1948

Consulting engineers practicing in states that permit persons other than registered engineers to

ANNOUNCING a Complete New Line . . .

ARMSTRONG Open Float and Thermostatic Steam Traps



Designed and Made by Armstrong Especially for Low Pressure Heating Service

■ Armstrong Open Float and Thermostatic Traps are the result of the demand by user-owners and contractors for an effective, trouble-free steam trap for heating service.

How They Work

When the steam is first turned on, Armstrong O.F.&T. traps quickly vent the air that has accumulated in the heating units. After start-up, the traps will vent air and CO_2 gas at steam temperature to prevent corrosion of unit heater tubes and other types of finned radiation. Condensate is removed as fast as it accumulates without loss of steam.

Advantages of Armstrong O. F. & T. Traps

The design and construction of Armstrong Open Float and Thermostatic Steam Traps provides outstanding benefits to both the owner and the installing contractor:

LOW COST is made possible by simple, compact design and large volume production.

EASY INSTALLATION. Pipe connections are horizontal and opposite. Traps are supported by the connecting pipes.

INTERNAL CHECK VALVES of 18-8 stainless steel can be furnished with the traps to save cost of installing external check valves.

YEARS OF SERVICE LIFE . . . Working parts are all stainless steel, highly resistant to both corrosion and wear.

MINIMUM MAINTENANCE . . . comes not only from the use of stainless steel parts, but also because the trap is self-scrubbing. Ordinary sediment and sludge are washed right through with the condensate.

Further Information Available

If a trap with these features is of interest to you, get in touch with your nearby Armstrong Representative. Ask him for Bulletin 775 which gives price, dimension and capacity data, or use the coupon below.

ARMSTRONG MACHINE WORKS
9656 Maple Street • Three Rivers, Michigan

FREE BULLETIN
No. 775 gives detailed information on Armstrong O.F.&T. traps.

ARMSTRONG MACHINE WORKS
9656 Maple Street, Three Rivers, Michigan
Please send a copy of Bulletin No. 775.
Name_____
Company_____
Street Address_____
City_____ Zone____ State_____

be stockholders in engineering firms will find other advantages in becoming an electing corporation. The family partnership long has enjoyed a reputation as a tax saving device, but it has several drawbacks. For example, it cannot be used in a personal service business and the legal rights given partners are extensive. None of these drawbacks are present in an electing corporation, so here the consulting engineer can get the advantages of the family partnership without the disadvantages.

A corporation also lends itself more readily to a systematic transfer of interest than does a partnership. Then, too, income already earned by a partnership cannot be shifted whereas a gift of stock automatically transfers its pro rata portion of income already earned within the year.

A final consideration is that a corporation can be used to accumulate income up to the point where it faces the penalty for unreasonable accumulation and then it can elect to be taxed as other than a corporation. This automatically ends the penalty threat.

Danger Spots

Some of the danger spots or disadvantages also must be considered. Any operating loss carry forward already available to a corporation would be lost upon electing to be taxed as other than a corporation. You may wish to delay the election until these losses are absorbed by the corporation.

Undistributed corporate income upon which the stockholders have paid the tax may be distributed later without any additional tax cost; however, it now appears that if the election is revoked or terminated, any undisturbed income will be "locked in" the corporation. All subsequent payments to stockholders will be deemed first to come out of current or previously untaxed corporate earnings, and will have to exceed these earnings before being considered to be out of undistributed income. It is recommended that all such undistributed income be paid out prior to year of termination, even if equal amounts have to be loaned back to the corporation.

Your change of status from a partner to an employee may make you subject to state and Federal unemployment taxes. If you are already subject to unemployment tax as a partnership, you may not be able to transfer your merit rating to the new corporation. Check your local state on this issue.

Most states have some sort of state franchise tax to which a sole proprietor or partnership is not liable. This may or may not be a deciding factor. For example, the Indiana tax is a flat $2 per year whereas Michigan charges $4 per $1000 on the total capital stock and retained earnings. Again check your local state law. ▲▲

PERFECT FIT *and* PROPER FUNCTION

CONNOR ENGINEERING CORPORATION

kno·draft® AIR DIFFUSERS

FOR THE NEW REYNOLDS METALS BUILDING

ARCHITECT—SKIDMORE, OWINGS & MERRILL, NEW YORK, N.Y.
ENGINEERS—EBASCO SERVICES, INC., NEW YORK, N.Y.
CONTRACTOR—HUFFMAN-WOLFE SOUTHERN CORP., CHARLOTTE, N.C.

Connor engineers and equipment solved a unique two way air conditioning problem at the new Reynolds Metals office building, Richmond, Virginia.

A. Functionally, Connor equipment permitted *complete* concealment of *both* the air diffusers and return registers above a grid ceiling, with proper air distribution assured.

B. Architecturally, Connor equipment, where necessarily exposed, hardly reveals its purpose by stylistically conforming with the striking simplicity of the building's interior.

Diffuser installation above ceiling is an engineering accomplishment previously believed unworkable.

Pre-installation tests conducted at Connor's laboratory proved conclusively that the high degree of air entrainment produced by the Kno-Draft single stream diffuser satisfactorily would move air upward through the grid ceiling, where it would mix thoroughly with the supply air, and provide the areas below with constant, highly efficient air conditioning. And since installation, the equipment has been serving the Reynolds building to complete satisfaction.

Contact Connor for recommendations on your air distribution problems . . . common or uncommon. Our research and long practical experience guarantees you constant comfort conditions.

In grid ceiling areas, diffusers and return registers are entirely hidden.

In the plastered ceiling cafeteria, black, rounded contour units conform with the decor.

A standard Kno-Draft diffuser in an office area.

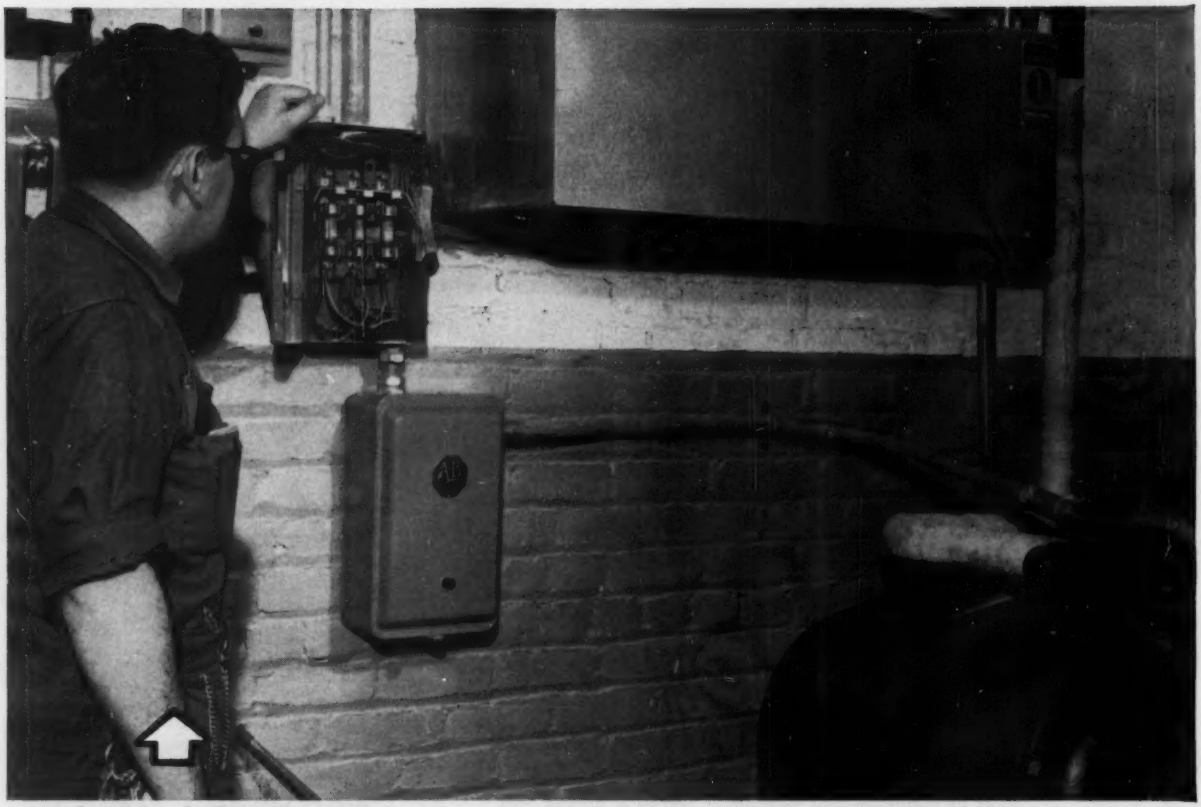
In other areas, linear diffusers, virtually unnoticeable from below, are mounted along the wall.

The above ceiling diffusers and the specially designed round and slotted units perfectly fulfilled stylistic requirements.
And not unexpectedly, Connor equipment is of all-aluminum construction.

CONNOR ENGINEERING CORPORATION

DANBURY • CONNECTICUT

CONNOR kno·draft®
high velocity air diffusers



Orville L. Welsh ASST. CHIEF ENGINEER, CONTINENTAL BAKING CO.

"Experience proved to us, Fusetron Fuses could save us money and provide safer protection." . . . *Orville L. Welsh*

ASST. CHIEF ENGINEER
CONTINENTAL BAKING CO.
TOLEDO, OHIO

CASE 1

"A refrigeration compressor of ours was frequently being shutdown because the 60 amp. protection we used just could not hold the starting currents.

"After reading over Fusetron dual-element fuse literature sent to us by our company headquarters, we tried them out with great success. In the past twelve months, we have not had to go near the switch or open its cover.

CASE 2

"In another case, Fusetron fuses saved us a considerable amount of money. We installed 600 ampere Fusetron fuses in parallel in our 1200 ampere entrance switch, rather than using the more expensive mechanical type of protective device.

"Personally, I am confident we now have better protection than we could have had with other types of protective devices."

Here's why FUSETRON dual-element fuses provide safer, more dependable and money-saving protection . . . FUSETRON dual-element fuses provide 10 point protection against electrical troubles. This is unlike circuit breakers or ordinary fuses which, except in rare cases, protect only against short-circuits.

IN ADDITION:

Fusetron fuses require no maintenance or recalibration. They are calibrated at the factory by engineers. Once properly installed, they require no inspection or down-time necessary on mechanically operated devices. There are no hinges, pivots or contacts to stick or get out of order. Dust, corrosion or oxidation cannot increase a Fusetron fuse's capacity or lengthen its blowing time.

After years of inactivity, a Fusetron fuse will give the same safe, dependable protection if called upon to open as it would have on the day it was installed.

Fusetron fuses have high interrupting capacity. FUSETRON fuses can safely interrupt severe short-circuit currents and are adequately safe to meet future circuit growth.

Fusetron fuses save on installation costs. Because their long time-lag prevents them from opening needlessly on motor starting currents or other harmless overloads, Fusetron fuses can be installed in sizes to approximate the load current. This protects against waste of space and money by permitting use of proper size switches and panels.

Why Risk Losses! One needless shutdown . . . one lost motor . . . one destroyed switch or panel . . . one burned out solenoid . . . may cost you far more than replacing all other types of protective devices throughout the entire installation with Fusetron dual-element fuses.

For Loads above 600 and up to 5,000 amps . . . Use BUSS Hi-Cap Fuses. They have an interrupting capacity sufficient to handle any fault current regardless of system growth.

They can be coordinated with Fusetron fuses on feeder and branch circuits to limit fault outages to circuit of origin.

for more information write for } BULLETIN FIS on Fusetron fuses.
BULLETIN HCS on BUSS Hi-Cap fuses.

FUSETRON
BUSS

for safe, modern money-saving protection specify FUSETRON dual-element FUSES and BUSS Hi-Cap FUSES throughout entire Electrical System!

BUSSMANN MFG. DIVISION, McGraw-Edison Company University at Jefferson, St. Louis 7, Mo.

Teaching really "takes"

when classroom weather is fair

School officials are becoming increasingly aware of the close relationship between peak learning efficiency and correct comfort level. With the Nesbitt System, you offer school administrators the opportunity to upgrade academic achievement through controlled classroom climate. And, with Nesbitt, you can show savings of 20% or more on construction, installation and equipment costs.

ESSENTIALS OF THE NESBITT SYSTEM

The system combines the Nesbitt Syncretizer unit ventilator for every classroom with Wind-o-line radiation installed along the sill. The Syncretizer automatically provides the heating, natural cooling and draftless ventilation for each classroom, exactly as required.

Wind-o-line radiation eliminates the dual problem of cold walls and window downdrafts, provides overnight gravity heat without other special controls.

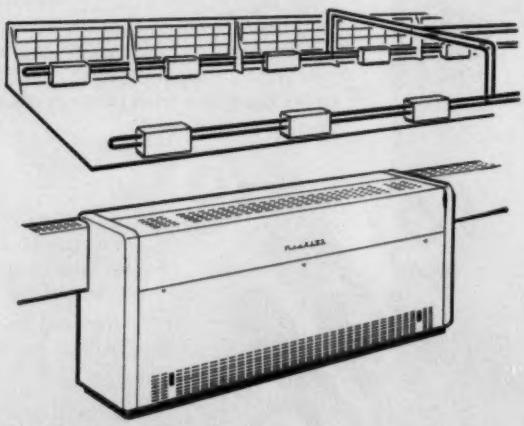
HOW THE NESBITT SYSTEM CUTS COSTS

1. The Nesbitt System provides the required heating capacity while circulating only one-third as much hot water as conventional systems. This permits the use of smaller, less expensive pipes and pumps.

2. Actually the Wind-o-line radiation takes the place of the usual supply and return mains. This eliminates costly pipe trenches, runouts and pipe insulation.

3. Factory installed crossover tubing, expansion loops and balancing valves in the Syncretizer eliminates expensive jobsite labor.

Total savings make it possible for even low budget schools to take advantage of the finest heating and ventilating system money can buy.



WRITE FOR COMPLETE CATALOGS AND ENGINEERING DATA

Nesbitt Series WIND-O-LINE SYSTEM

Made and Sold by John J. Nesbitt, Inc., Philadelphia 36, Pa. • Also sold by American-Standard, American Blower Division and American-Standard Products (Canada) Ltd.

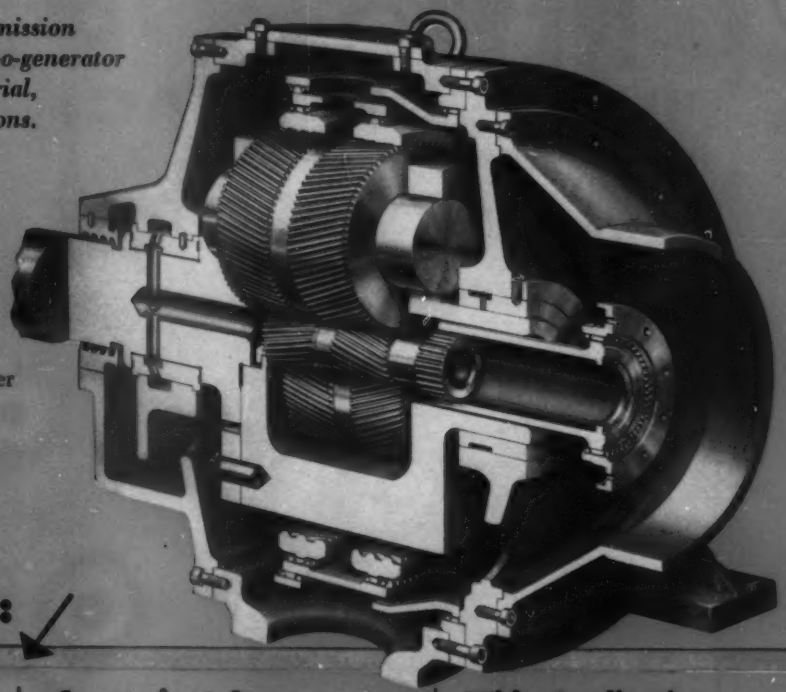
DE LAVAL-STOECKICHT
PLANETARY GEAR

...*for high speeds...high horsepower*

Proved in hundreds of installations abroad totalling over 3,000,000 horsepower—now available in America!

For all high torque power transmission applications such as pump turbo-generator and compressor drives in industrial, municipal and marine installations.

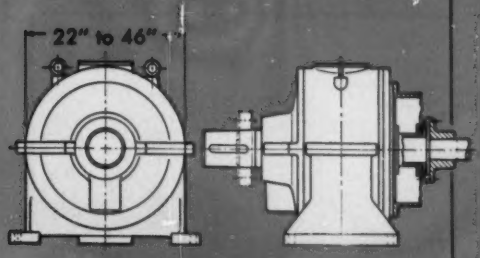
This cutaway view of the De Laval-Stoeckicht Planetary Gear shows how it provides flexibility for proper load distribution throughout the gear members. The thoroughly proved and tested design is completely reliable in transmitting high horsepower for high speed applications. • Highest efficiencies (98% or higher)...no high speed bearings...less friction losses.



Check These Advantages:

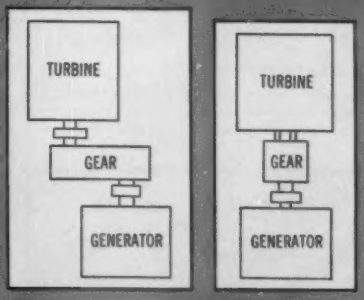
Small Size—Light Weight

Compact—low weight per hp. Sizes range from 22" to 46" in diameter, depending on horsepower requirements. Example: 5000 hp planetary unit weighs 1700 lbs. against 6000 lbs. for conventional gear.



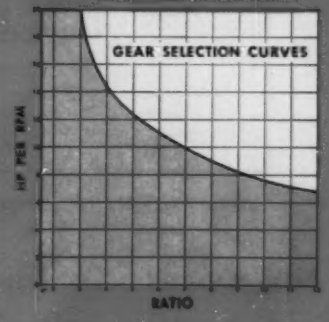
Convenient Arrangement

Co-axial or "in-line" arrangement of gear members takes up far less space than parallel axis gears of equivalent horsepower rating.



Wide Application

Capacity range shown in shaded area on chart below. For other applications, contact your De Laval Sales Engineer.



For further details, write for Bulletin 2400.

DL431

DE LAVAL *Steam Turbine Company*

894 Nottingham Way, Trenton 2, New Jersey

DRY YOUR OILS.....

AT LESS COST WITH

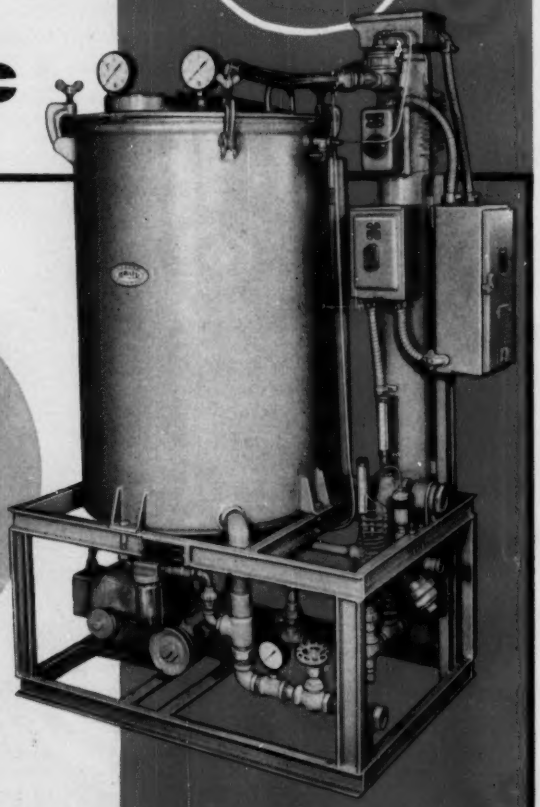
NEW

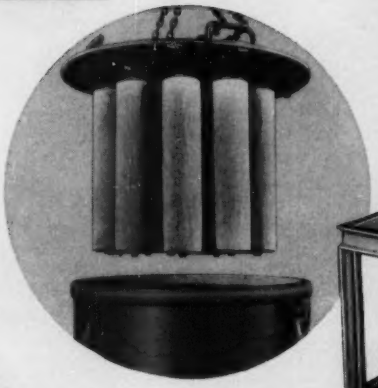
FIL-THERMO-VAC

by BOWSER ESTABLISHED 1885

LUBRICATING...
INSULATING...
COOLING...
HYDRAULIC...

- petroleums
- synthetics
- vegetable
- animal
- fish





Oil disperses through fiberglas micro-filters into vacuum chamber where water and other volatiles are drawn off . . . condensed and ejected.

LOW COST!

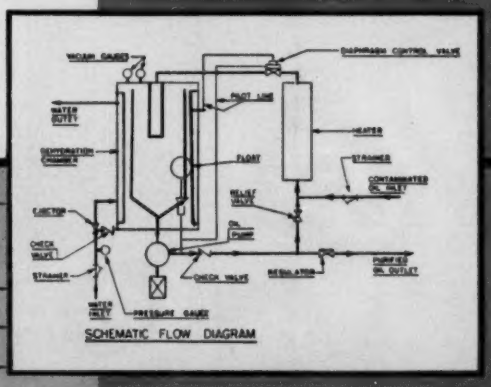
Automatic self-policing "package system" costs less, does better job than any other method. It will pay to get the facts!

BOWSER, Inc.

FORT WAYNE, INDIANA

REGIONAL, DISTRICT AND SALES OFFICES:

Albany • Atlanta • Boston • Buffalo • Chicago • Cleveland • Dallas • Detroit • Fort Wayne
Houston • Kansas City • Los Angeles • Milwaukee • Minneapolis • New Orleans
New York • Philadelphia • Pittsburgh • St. Louis • San Francisco • Seattle • Tulsa



SCHEMATIC FLOW DIAGRAM

BOWSER, Inc. DATE_____
FORT WAYNE, INDIANA
Gentlemen: Send FACTS ABOUT FIL-THERMO-VAC to:

Name_____

Company_____

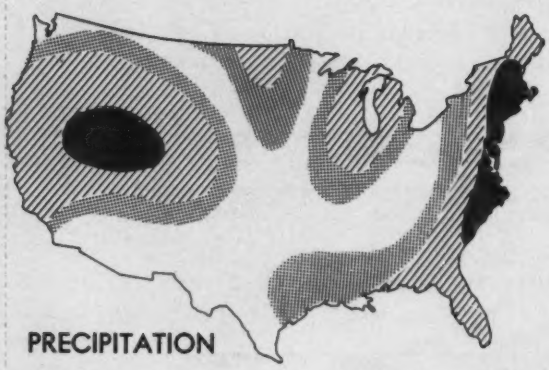
Address_____

City_____ State_____

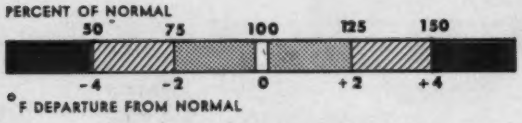
KRICK WEATHER OUTLOOK

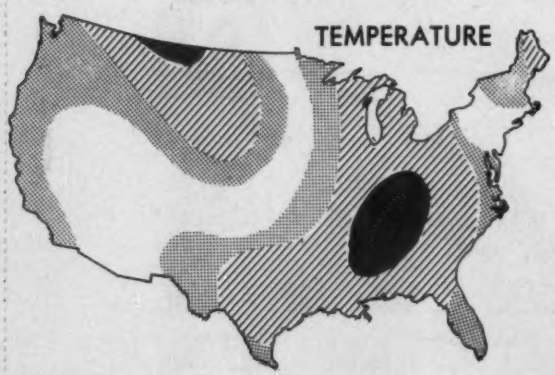
NOVEMBER 1958

Prepared Exclusively for CONSULTING ENGINEER

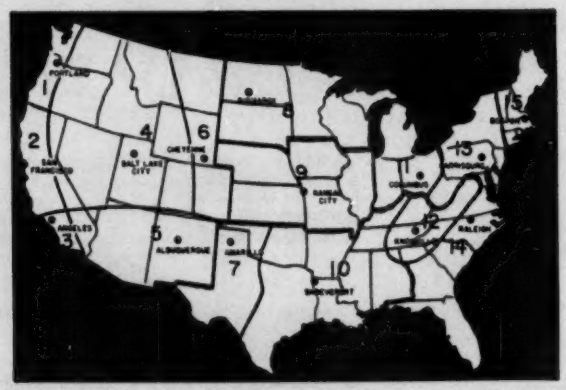


PRECIPITATION





TEMPERATURE



CONSTRUCTION DAY FORECAST LOCATIONS

CONSTRUCTION DAY CRITERIA

To be considered a construction day on these charts, the day's maximum temperature must be more than 38 degrees. There must be less than six inches of snow on the ground. There must be less than six hours of active precipitation between the hours of 7 a.m. and 5 p.m. There can be no more than one inch of rain on the preceding day.

NOVEMBER HIGHLIGHTS

The weather trend over the country in November will feature predominantly warm weather in the west; cool in the east – compared to normal. Precipitation will be well below normal in the west, assuring many fine construction days over most of the region, while coastal areas in the east and the southeastern quarter of the country will have above normal rainfall and more storminess than normal. A broad belt through the west – stretching from the California coast eastward to the Great Plains and from the Canadian border southward to central Arizona and New Mexico – will have precipitation totaling only about 50 to 75 percent of normal. This same area will have generally near normal to slightly above temperatures, with the greatest above-normal departure due along the eastern edge of the Rockies. This warming will be primarily due to frequent chinook winds, which in themselves will tend to hamper construction on three or four days. The south will be extremely cold in November – compared to normal – with temperatures averaging from two to four degrees below normal generally and more than four degrees below normal in the Mississippi and Ohio river valleys. The Great Lakes region will have below normal moisture – only about 50 to 75 percent of the historical average – and temperatures will run from two to four degrees below normal. The cold belt will extend as far north as New Jersey along the Atlantic coast, with warming taking over in New England, where slightly above normal temperatures will prevail. The broad precipitation belt along the East coast will extend inland past the Appalachians, with the heaviest moisture due along the coastal areas from South Carolina through New England.

TEAR OUT ALONG PERFORATION.

These forecasts are prepared by Irving P. Krick Associates, Inc., the world's oldest and largest weather engineering firm. The forecasts are based on methods developed by this group at California Institute of Technology prior to World War II. After the War, the methods were adapted to high speed electronic computing machines to shorten the time required to solve the complex problems of the atmosphere. Ultra-long range forecasts, up to a year or more in advance, are now available. Information on other Krick weather services is available by writing to the home office of the firm at 460 South Broadway, Denver, Colorado.

CONSTRUCTION DAYS

NOVEMBER 1958 ESTIMATES															
LOCATIONS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HIGHEST	26	30	30	29	30	30	30	27	30	30	27	29	29	30	27
LOWEST	16	21	26	16	22	15	21	6	18	21	13	21	18	22	17
AVERAGE	21	26	28	22	28	21	27	15	25	27	21	25	23	27	22
ESTIMATE	24	29	29	27	29	22	28	10	24	26	14	24	20	25	20

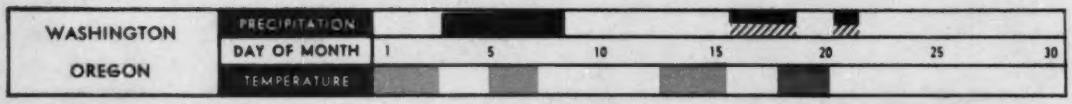
These estimated construction days for key cities in the United States should be interpreted as an average of estimated conditions over the forecast area. To obtain the best results, the forecast number of construction days should be compared with the temperature and precipitation anomaly maps and the timing estimates to determine the probable number of construction days in your locality. The forecast construction days are based on average construction day requirements as defined under "Construction Day Criteria," and should be adjusted for individual operations.

DECEMBER AVERAGE AND RANGE*															
LOCATIONS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HIGHEST	27	30	31	22	31	25	29	11	25	29	22	28	20	29	21
LOWEST	12	21	26	8	21	11	21	2	10	22	5	17	6	13	7
AVERAGE	20	26	29	15	25	18	26	5	17	26	13	22	13	24	15

JANUARY AVERAGE AND RANGE*															
LOCATIONS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
HIGHEST	30	30	31	24	29	19	29	15	21	29	16	28	23	29	16
LOWEST	4	24	23	0	16	1	13	0	8	18	3	15	1	18	2
AVERAGE	16	27	28	11	24	16	23	5	16	23	11	22	14	24	10

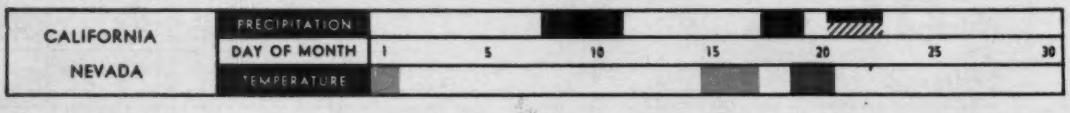
*Historical Average, Not a Forecast

NOVEMBER 1958 TIMING OF SI

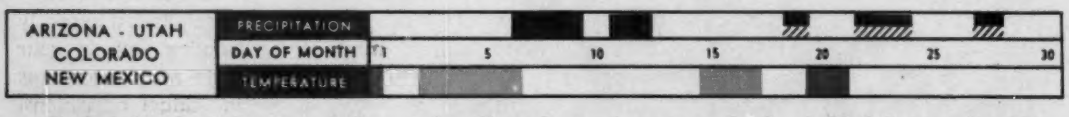


It will be stormy along the coast in this area on four or five days around the 5th. The first half of the month will be predominantly mild; the latter half will be cool, with subfreezing temperature readings inland around the 19th and 20th.

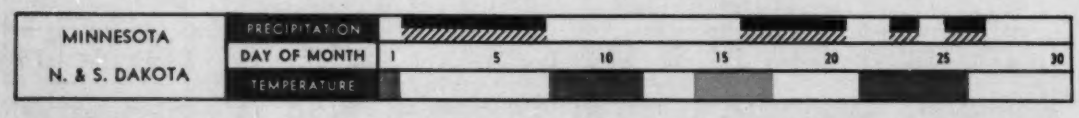
The shower period indicated following the start of the month is only important in northeast Montana. There is a chance of further precipitation in southern areas around the 11th and 12th and in southeast Wyoming around the 26th and 27th.



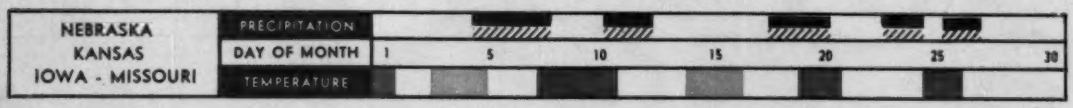
Most important storminess in this area will occur around the 10th; lesser amounts of precipitation are expected during the latter half of the month. First half of month will be predominantly warm; latter half will be on the cool side.



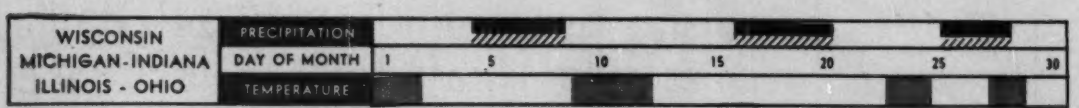
Cool outbreak at the start of the month will not be too important; the first half of the month will be quite warm. Showers indicated prior to the 20th apply mostly to extreme southern areas. Cold outbreaks will bring subfreezing temperatures in the north.



Storminess will prevail on at least three or four days around the 5th of the month. Mild weather indicated for about mid-month will afford the best construction period. All cool outbreaks will drop temperatures to near zero in the north.



Cold outbreak at the start of the month is expected to be most important in the east. Mild weather prior to the 5th applies mostly in the west. Eastern areas will have additional cool weather around mid-month while the west again will be mild.

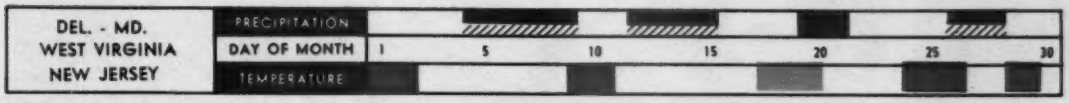


Cold weather will be the predominating factor throughout the month in this area, except for brief temperature moderation at mid-month. Showers and snow indicated for the period prior to the 20th will be rather light and intermittent.

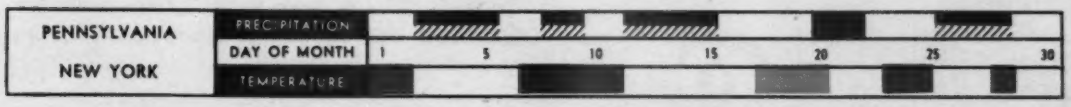
SIGNIFICANT WEATHER EVENTS

RAIN
SNOW
WARM
COLD

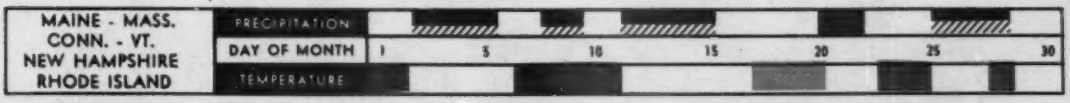
The timing bars below are intended to indicate periods of important general storminess and important departure from temperature normals in areas indicated. They are highly accurate over the area indicated, but are too general to pinpoint small local storminess or showers. Allow one day on either side of indicated storm or extreme temperature periods for general planning. Combination rain or snow shading indicates either one or both.



The most important rains in this region will come during the first half of the month, and there will be some snow at higher elevations. Best construction period should occur immediately following mid-month.

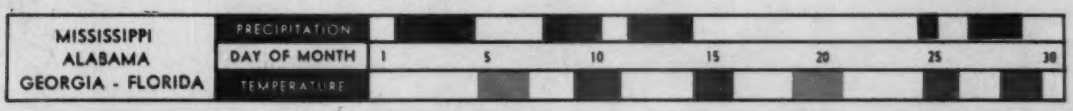


Showers prior to the 10th will be most important in southern Pennsylvania. Most general showers in the area are expected around the 14th. Temperatures will be subfreezing everywhere during the cold outbreaks toward the end of the month.



Precipitation will be quite heavy during the month. And all indications point to cool weather. However, temperatures will be slightly above the normal readings for this region. The best construction period can be expected immediately following mid-month.

Precipitation will occur on at least three or four days around the 10th. Early month will feature predominantly mild weather but the last ten days will be on the cool side with subfreezing temperatures as far south as central Texas.



The cool weather indicated for around the 10th is not expected to push as far south as Florida. Southern Florida can expect further showers around the 19th and 20th in addition to the periods shown in the precipitation band.

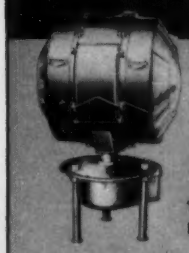
Most of the precipitation during the initial storm period will occur on the 6th and 9th of November. The storm prior to the 15th will affect mostly eastern and coastal regions. Temperatures generally will be below historical averages.

Favorite Welcoming Committee the World Over . . .

CROUSE-HINDS

aviation lighting equipment

Wherever pilots fly, for over a quarter of a century they have depended on Crouse-Hinds aviation lighting and weather equipment to guide them safely. Crouse-Hinds has grown up in partnership with the aviation industry – anticipating its demands for better and more specialized lighting equipment – until today Crouse-Hinds offers you the most complete line of aviation lighting equipment in the world. Only a small portion of it can be illustrated here. Contact your nearby Crouse-Hinds office for complete details.



A Complete Line of Lighting Equipment

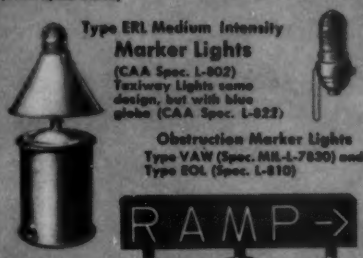
Type DCB Rotating Beacons (CAA Spec. 291)

High Intensity Runway Lights

Type HRC Bi-Directional-Movable Beam (CAA Spec. L-818)

Type HRL Bi-Directional-Fixed Focus (CAA Spec. L-819)

Type HSL Uni-Directional-Fixed Focus (CAA Spec. L-820)



Type ERL Medium Intensity Marker Lights (CAA Spec. L-802) Taxiway Lights same design, but with blue globe (CAA Spec. L-822)

Obstruction Marker Lights Type VAW (Spec. MIL-L-7830) and Type EOL (Spec. L-810)

Type TGS Taxi Guidance Signs

Because of ever-increasing ground traffic, larger fields and increased activity under reduced visibility, Crouse-Hinds has led the field in developing a fully approved system of illuminated signs to help pilots to their destination quickly and safely.

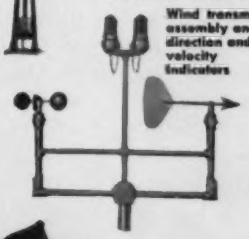
A Complete Line of Weather Equipment

Illuminated Wind Cones

Type WC-36 (Spec. MIL-I-7854) and Type WC-18 (Spec. L-807)

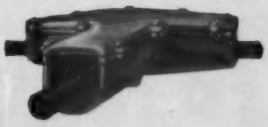
Wind Instruments

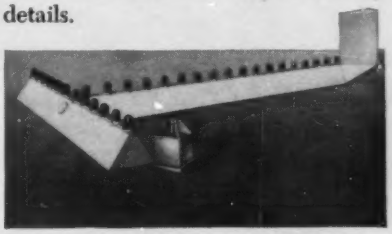
Wind transmitter assembly and direction and velocity indicators



Type PTS Portable Traffic Signals (Spec. MIL-L-6617)

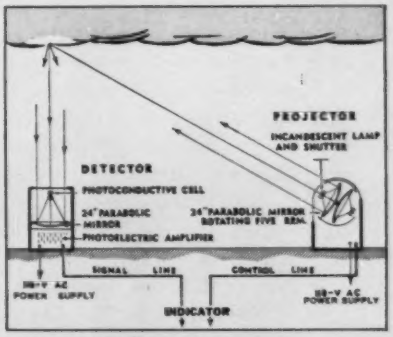
Type UGA Underground Junction Boxes





Illuminated Wind Tee, Type WT

Only Crouse-Hinds offers you wind tees to serve as a continuous night and day indicators of wind direction and preferred landing position. Wind tees can be free floating or remotely controlled, as desired.



Automatic Ceilometer— Transmissometer Systems

Crouse-Hinds' rotating beam Ceilometer system not only provides accurate night and day ceiling readings in the runway approach, but also reads automatically every 6 seconds giving frequent, accurate observations of cloud height at the point where they are most vitally needed.

The photoelectric Transmissometer system provides an exact measurement of visibility in the runway approach regardless of tower location. Even if the tower is encircled in fog or several miles distant from the approach, the tower operator is still always sure if a safe landing can be made when he uses the Crouse-Hinds Transmissometer system.

CROUSE-HINDS COMPANY

SYRACUSE 1, N. Y.

OFFICES: Birmingham Boston Buffalo Chicago Cincinnati Cleveland Dallas Denver Detroit Houston Indianapolis Jacksonville Kansas City Los Angeles • Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh Portland, Ore. St. Louis St. Paul San Francisco Seattle Tulsa Washington RESIDENT REPRESENTATIVES: Albany Atlanta Baltimore • Baton Rouge Charlotte Chattanooga Corpus Christi Reading, Pa. Richmond, Va. Shreveport
Crouse-Hinds Company of Canada, Ltd. Toronto, Ont.

Atoms in Action

JOHN F. LEE

Broughton Professor of Mechanical Engineering
North Carolina State College

Geneva Atomic Energy Conference -- 1958

THE INTERNATIONAL Conference on the Peaceful Uses of Atomic Energy held in Geneva in September virtually removed the cloak of secrecy from civilian applications of both the fusion and fission processes. Actually the first measure of declassification occurred during the 1955 conference in which world powers sought scientific prestige as well as propaganda gains by divulging a few of their nuclear achievements. It was then clear to everyone that none of the great powers had any pronounced scientific advantage in the nuclear field. It was also clear that secrecy simply meant that several nations had proceeded in parallel directions with substantially the same results. The wastefulness of the situation was shocking not only to scientists and engineers but to political leaders throughout the world as well.

In the conference this year, preceded by important revelations by the United States, Britain, and Russia in the field of fusion, nearly all the participating nations gave up the last vestiges of secrecy in the nonmilitary atomic area of science. Military developmental and hardware projects still are subject to strict secrecy, and there is general agreement that they should be.

Commercial Prospects Brighten

The important result of the 1958 conference is the promise of greatly accelerated commercial application of nuclear energy within a framework of international cooperation and exchange of ideas. International commercial competition in the nuclear field should become much more severe with the increased availability of information. U.S. industry will need to be more alert than ever to nuclear developments if we are not to lose our commercial standing in the world markets.

Conference Findings

Six important findings emerged from the 1958 nuclear conference. These findings underline international hope and optimism in the nuclear field.

¶ An international tally showed that fission power plants already have produced hundreds of millions of kilowatt-hours of electricity. It is now certain that nuclear power plants having a combined capacity of 15-million kilowatts of electricity output will be in operation by 1970. This figure represents 50 times the present operating capacity. There was every justification for the expectation that the cost of nuclear power will fall well below conventional power in the United Kingdom by the late 1960s and will compete with conventional power in other nations between 1963 and 1970.

¶ Several papers on fusion energy demonstrated amazing progress made on a wide front. The general consensus was that commercial fusion power is 10 to 20 years away. A note of pessimism was sounded by Dr. Edward Teller who thought commercial use of fusion energy would not be accomplished in this century.

¶ Reports on the United States nuclear merchant ship Savannah and the Russian nuclear icebreaker Lenin raised high hopes for nuclear propulsion of ships. Although some reports on commercial nuclear aircraft propulsion systems were presented, the outlook was not encouraging.

¶ The world-wide uses of radioactive isotopes in industry, medicine, and agriculture constituted one of the most revealing events of the conference. It

was reported that these nuclear tools are saving $400 million a year in the United States and one billion rubles a year in Russia. It was clear that much more extensive education is needed to acquaint industry with the diverse uses of radioactive isotopes. There is no reason the savings in the U.S. could not be quadrupled in a year or two if the smaller industries become aware of the potentialities of isotopes.

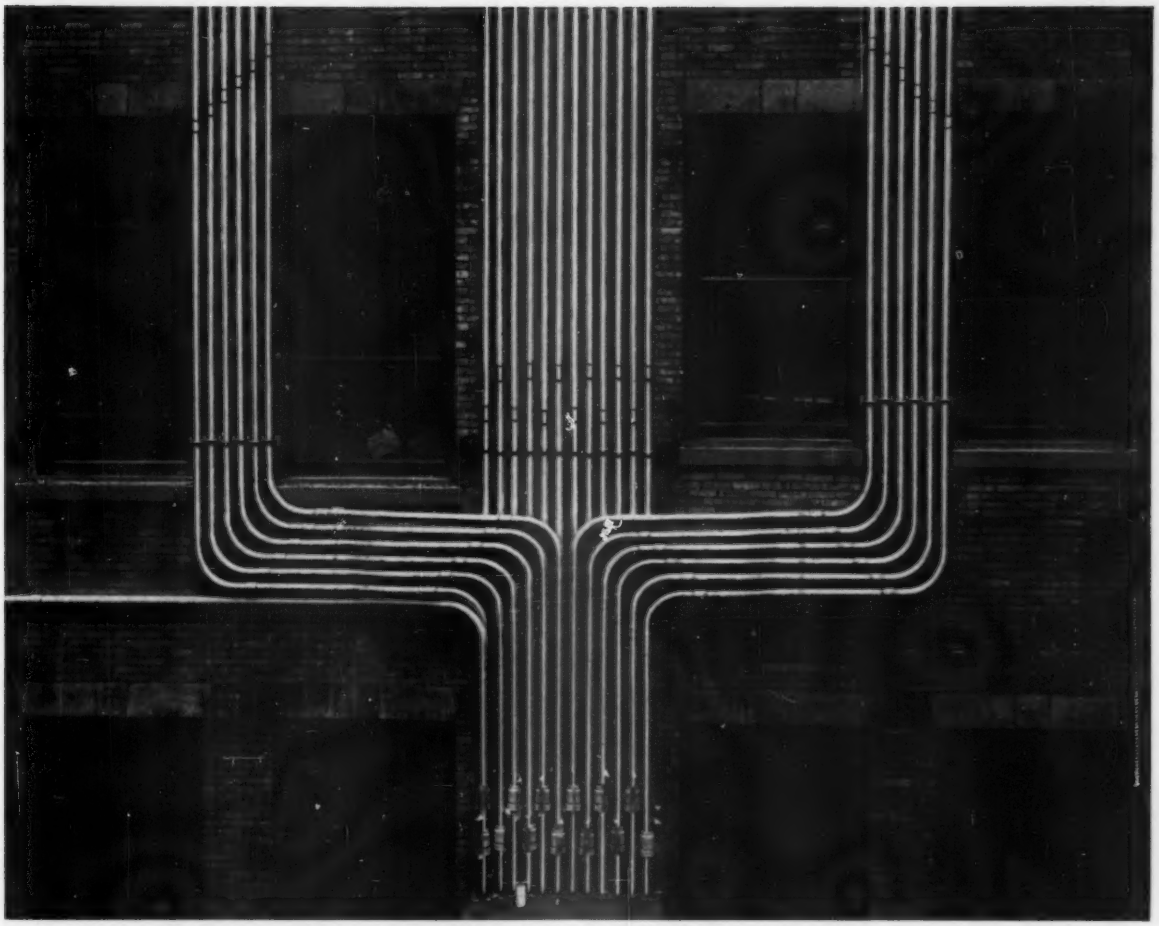
¶ Operating experience with nuclear power plants and experience in the handling of radioactive materials have dispelled much of the concern about hazards apparent in the 1955 conference. There was still some concern about economic and safe disposal of radioactive wastes but even in this area solutions to the problems are in sight. It seems that much of the public misunderstanding prevalent in the U.S. about the safety of nuclear power plants could be alleviated by giving wide publicity to evidence submitted at this meeting.

¶ The need for international agreements to deal with problems associated with mobile reactors and the disposal of radioactive wastes in the oceans was a topic of lively interest. The importance of these agreements was dramatically illustrated by voyages of our own Nautilus when a variety of strict conditions were imposed before it could be admitted to certain foreign ports. This problem will become even more acute with the appearance of nuclear merchant ships.

Controlled Fusion

Experiments aimed at obtaining more knowledge about fully ionized gases (plasmas) at high temperatures were the major point of interest at the conference. Six sessions were devoted to thermonuclear reactions. Fusion devices occupied a point of central interest in most governmental exhibits. The experimental techniques were rather similar and relatively little information not already revealed by the United States, Britain, and Russia was presented. It is important to note that no one is absolutely certain he has achieved a controlled thermonuclear reaction. More energy is put into these processes, at present, than is released by the process itself, and while much of the basic theory has been substantiated by these experiments, some significant theories have not been borne out and certain observations have no theoretical answer.

Despite the facts that major progress already has been made in fusion experiments and that a concerted international effort is being devoted to this area of nuclear science, development and knowledge are still in the embryonic stage. In my opinion, a decade or more will be needed before a break-even fusion process will be achieved (a process in which as much energy is produced as is



Why Alcoa Aluminum Rigid Conduit Proved to Be the Best Buy for an Ebasco Remodelling Job

In planning to expand the electrical capacity of a 26-story New York office building, the budget dictated that existing external shutter brackets be used for conduit suports. It was doubtful that they would support the weight of steel conduit. The only alternative was a more expensive breaking through of walls and floors inside the building.

The solution proved to be Alcoa® Aluminum Electrical Rigid Conduit. Twenty-four 2½-in. risers were installed on the exterior of the building from painter's scaffolds. The light weight of aluminum conduit made the job easier and faster and reduced labor costs. Further, no maintenance should ever be necessary because aluminum resists corrosion and staining and will never need painting.

For new plants and offices, too, new low prices in all sizes can make aluminum your most attractive conduit buy. Alcoa Rigid Conduit in sizes up to 6 inches is furnished with color-coded thread protectors to tell conduit size at a glance. For more information, call Alcoa, or contact your Alcoa Conduit Distributor. Aluminum Company of America, 2328-L Alcoa Building, Pittsburgh 19, Pa.

Your Guide to the Best in Aluminum Value

put into the process). The problems of remote controls, radiation effects, and development of high-temperature materials still will remain as important barriers to economic exploitation.

Nuclear Power

One important question was settled at the conference in connection with the possible obsolescence of fission power plants in the face of fusion development. When all the fusion facts were bared it was evident there was little to fear within the period covered by the usual useful life of a power plant. Although fusion prospects were never serious deterrent to decisions to proceed with fission power plants, there can be little doubt that the fear of premature obsolescence did crop up from time to time during their development.

The safety and reliability of nuclear power plants was adequately demonstrated on the basis of experience reported at the conference. Only the most confirmed skeptics now can raise questions about this phase of nuclear power plant operation. Most nuclear power plants were built at costs higher than estimated but nevertheless each new station showed a marked decrease in the cost of producing power.

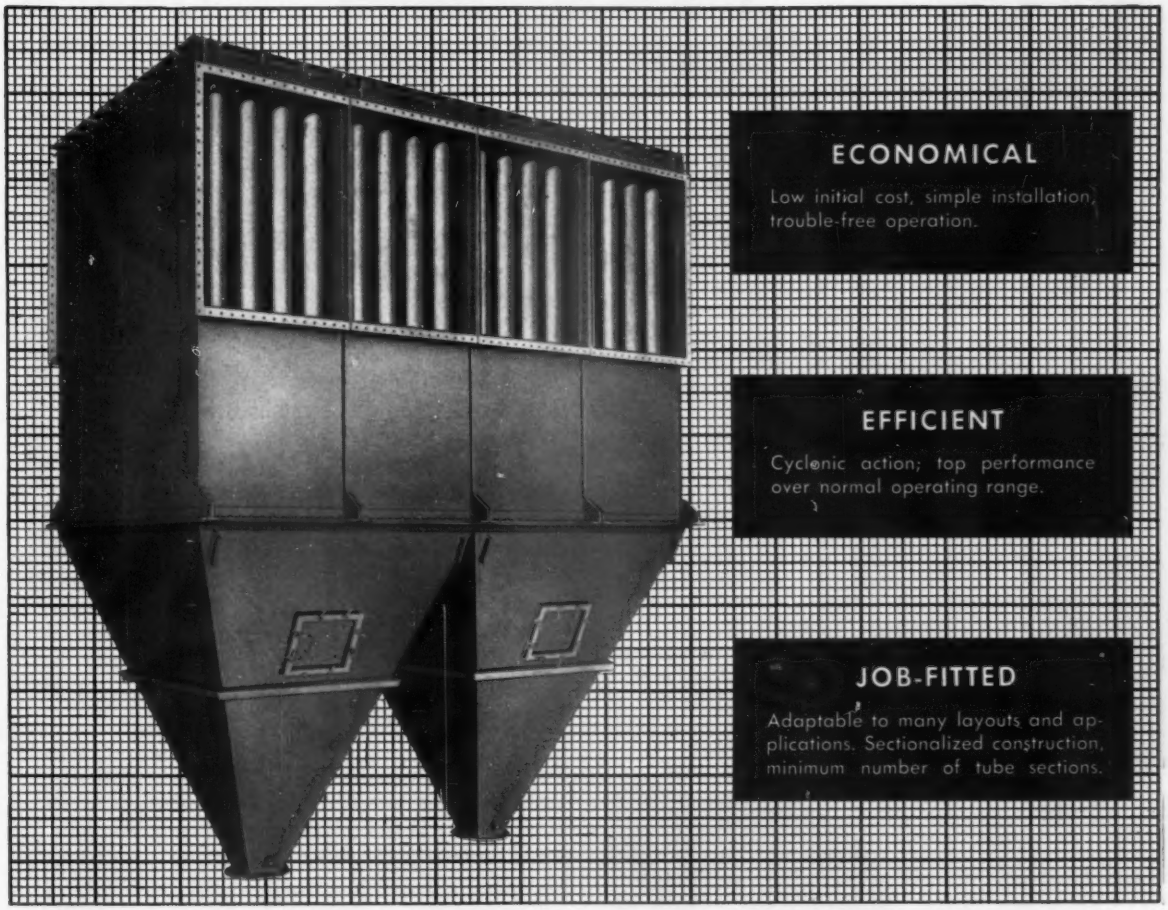
A general session was devoted to reporting experience with nuclear plants in France, the USSR, the United Kingdom, and the United States. It was reported that at present 13 nuclear power reactors with a net useful capacity of some 200,000 kilowatts are operating. This figure includes three Calder Hall reactors in the United Kingdom which are supplying electricity to the national grid; one in the USSR; eight in the United States, generating electricity for distribution; and one in France, which is mainly experimental and produces no net gain.

The first two Calder Hall reactors have supplied 730-million kilowatt-hours of electricity, equivalent to a saving of 400,000 tons of coal in two years. A third is operating and a fourth is scheduled to begin producing in December 1958 or January 1959. The Shippingport Plant in the United States, operating since December 1957, has produced some 90-million kilowatt-hours.

U.S., Russian, and French Reactors

The session was also informed of experience with a total of 23 U.S. nuclear reactors, including 11 non-military plants, for either power or experimental purposes. The Soviet Union's first nuclear power plant of 5000-kw capacity has been operating since June 1954. Other plants are under consideration. The G1 reactor at Marcoule which produced the first kilowatt-hour of nuclear origin in France, in September 1956, was designed primarily to produce plutonium. It will be followed by the G2, expected to begin operations later this year, and the G3, in

AMERICAN BLOWER PRECIPITATORS



Look into mechanical-type collecting equipment for control of dust and fly ash. You'll find that American Blower's Series 342 Precipitator offers three very practical advantages: adaptability, efficiency, and low cost.

Its sectionalized construction shortens erection time; factory-assembled tube sections are shipped to you match-marked for easy reassembly. And since each tube assembly is basically an individual cyclone or dust collector, the multi-tube Series 342 delivers an over-all performance comparable to the high efficiency of a small-diameter cyclone collector.

For your specific efficiency and pressure-drop requirements, a variety of tube designs and arrangements are available – in either steel or cast-iron. You may choose top, slant, or back outlet. (Front inlet is standard.)

All units feature readily removable inlet and outlet tubes to facilitate servicing; back-outlet construction has easily removed top covers. Access door on each hopper permits quick inspection.

Why not discuss your dust-collection problem with an American Blower sales engineer? He offers a complete line of fly ash precipitators and dust collectors for public utilities and industrial plants – and his application experience may prove most helpful to you. Call your nearby American Blower branch office, today. Or write: American-Standard,* American Blower Division, Detroit 32, Mich. In Canada: Canadian Sirocco products, Windsor, Ont.

*American-Standard and Standard® are trademarks of American Radiator & Standard Sanitary Corporation.

American-Standard Products

AMERICAN-Standard

AMERICAN BLOWER DIVISION

1959. Both reactors will produce usable electricity.

Speaking specifically on Calder Hall experiences, the British reported that these reactors and their fuel elements have operated most satisfactorily as combined power and plutonium producers. Operational experience has indicated that the gas-cooled graphite-moderated reactor system should prove suitable as the basis of a nuclear power generation program. Reviewing performance, the British said the power output had been increased over original designs; the coolant had proved satisfactory; the graphite moderator showed no deterioration in service; and when it was found that the fuel elements required support to withstand operational stresses, the addition of a simple brace solved the problem. Safety was a prime consideration. Equipment provided to give early warning of burst fuel cartridges had proved extremely sensitive. Some leakage of the carbon dioxide coolant had occurred but had presented no health hazards.

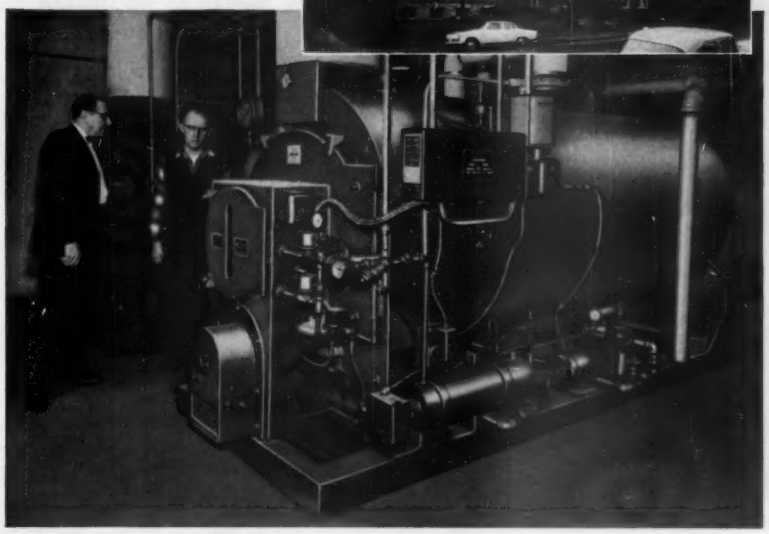
The G1 reactor at Marcoule was made as simple as possible to permit it to be put into operation quickly. Operation has shown the reactor to be stable and easy to regulate. Although an automatic control device was provided, manual control normally was used. The operating staff totaled 76 persons of whom four were engineers. The reactor had operated 76.5 percent of the total time in the period up to December 1957 and 84 percent of the time between then and June 1958.

USSR Reactor is Water Cooled

The Russians described characteristics of their first nuclear power plant which is graphite moderated and cooled with natural water under high pressure. The design eliminated the possibility of radioactive fission products being introduced into the coolant. In four years of operation, they said there had been only four instances of damage to fuel channels. One mishap had occurred when a fuel element received insufficient coolant but all safety controls had functioned normally and, after cleaning and repairs, the reactor had been started up again. The operation of fuel elements had been quite reliable.

Reviewing the Geneva conference one can find little support for extravagant claims for the immediate economic feasibility of fission power in the United States and none at all for fusion power anywhere in the world for many years. There are optimistic economic trends for fission power outside of the United States and the safety experiences are most reassuring. There is much to be learned and experienced in the entire field of peaceful uses of atomic energy. No single national power dominates the scene in this area of atomic energy development. ▲▲

Two 75 H.P. Continental Automatic Boilers at Gordon Junior High School, Coatesville, Pa. Theodore Stetler (right) superintendent of maintenance shown with Merrill A. Squier, of Besco Sales, Continental Boiler representative.



HEATING COSTS CUT 21% with new Continental Boilers

In 1955, the Coatesville, Pa. school district purchased two new 75 H.P. Continental Automatic Boilers firing #5 oil to heat three adjoining school buildings from a central plant. The new boilers saved $2,614.51 in the first two years of operation. This is a 21% reduction in heating costs.

Merrill A. Squier, of Besco Sales, Continental Boiler representative in the Philadelphia area, says:

"You can count on Continental for highly efficient, low cost steam or hot water. Because of the simplified design, maintenance and downtime are cut to the bone. There are no refractory baffles to burn out, leak and cause short circuit of gases. Free rapid water circulation keeps heating surfaces clean. Steam and water spaces are easily checked through openings. Clean-out is easy."

Continental Boilers, firing oil or gas, are available in models from 20 to 600 H.P. with on/off, low-high-low, or modulating controls. For steam heating or process work at pressures from 15 to 250 lbs., or hot water heating at low or high temperatures. Literature on request.

BOILER ENGINEERING & SUPPLY COMPANY, INC.
Phoenixville, Penna.

The **Continental** AUTOMATIC BOILER

A HALF CENTURY OF BOILER MANUFACTURING EXPERIENCE

Let your Continental Boiler Specialist Help You

CALIFORNIA
El Cerrito—American Engineering & Mfg. Corp.
Escondido—Pacific Engineering Equip. Co.
Los Angeles—H. B. Brown Company

COLORADO
Englewood—Champion Specialty Co.

CONNECTICUT
Stamford—Arthur C. Beningson

DISTRICT OF COLUMBIA
Washington—Charles C. Plummer

FLORIDA
Jacksonville—H. L. McMurry & Co.
Miami—H. L. McMurry & Co.
Orlando—H. L. McMurry & Co.
Tampa—H. L. McMurry & Co.

GEORGIA
Atlanta—Mechanical Associates
Augusta—Tarte Boiler Repair Co.

ILLINOIS
Chicago—Automatic Steam Sales Co.

INDIANA
Indianapolis—C. C. Schuetz, Inc.
New Albany—Falls Cities Boiler & Machine

IOWA
Waterloo—J. A. Naymeyer Co.

LOUISIANA
New Orleans—Cressy Sales Company

MARYLAND
Baltimore—Heating Services, Inc.
Hagerstown—Hagerstown Equipment Co.
Salisbury—R. D. Grier & Sons Co.

MASSACHUSETTS
Dorchester—Lewis National Corp.

MICHIGAN
Dearborn—Kramer & Associates, Inc.

MINNESOTA
Minneapolis—Oil Burner Service Co., Inc.
St. Paul—Lincoln Equipment, Inc.

MISSISSIPPI
Jackson—Climate Engineers, Inc.

MISSOURI
St. Louis—Continental Boiler & Sheet Iron Works

NEBRASKA
Omaha—Midwest Utility Service Co., Inc.

NEW YORK
Binghamton—Ellis Morse Company
Buffalo—W. J. Clark Equipment Co.
Gloversville—Olin T. Caldwell & Co.
Hudson Falls—Boiler Equipment Co.
New York—Thermal International, Inc.
Rochester—Ernest J. Rookey
Syracuse—U & S Supply Corp.

NORTH CAROLINA
Greensboro—M. G. Newell Co., Inc.

OHIO
Cincinnati—Kenneth B. Little Co.
Cleveland—P. M. Equipment Co.
Columbus—Don Delp Co.
Toledo—Air Conditioning Distributors, Inc.

OKLAHOMA
Oklahoma City—Mecha-Line Co.

PENNSYLVANIA
Phoenixville—Besco Sales, Merrill A. Squier
Pittsburgh—John C. Gregg Company

RHODE ISLAND
Providence—Weatherall Engineers, Inc.

TENNESSEE
Knoxville—Boiler Supply Co.
Memphis—Middle States Associates, Inc.
Nashville—Boiler Supply Co.

TEXAS
Dallas—Rodgers Engineering Co., Inc.
Fort Worth—J. P. Philibert

UTAH
Salt Lake City—Power Engineering Company

VIRGINIA
Lynchburg—Industrial Heating Co.
Suffolk—C. Fred Bailey

WISCONSIN
Milwaukee—Industrial Steam, Inc.

The Word From Washington

EDGAR A. POE
Consulting Engineer Correspondent

OF IMPORTANCE to consultants is news that the International Cooperation Administration no longer will select engineers and architects by competitive bids on a project. Instead ICA's Office of Industrial Resources (under the deputy director of technical services) first will review its list of consulting firms and then select at least three firms judged to be best qualified for a particular project. Engineering and architectural firms will be listed in order of preference and this selection submitted to a panel composed of the director, office of contract relations; director, office of industrial resources; and deputy regional director for the geographic area concerned.

The principal factors used by ICA in its selection of consulting firms are:

¶ Reputation and standing of the firm and its principals in performance of the contemplated work.

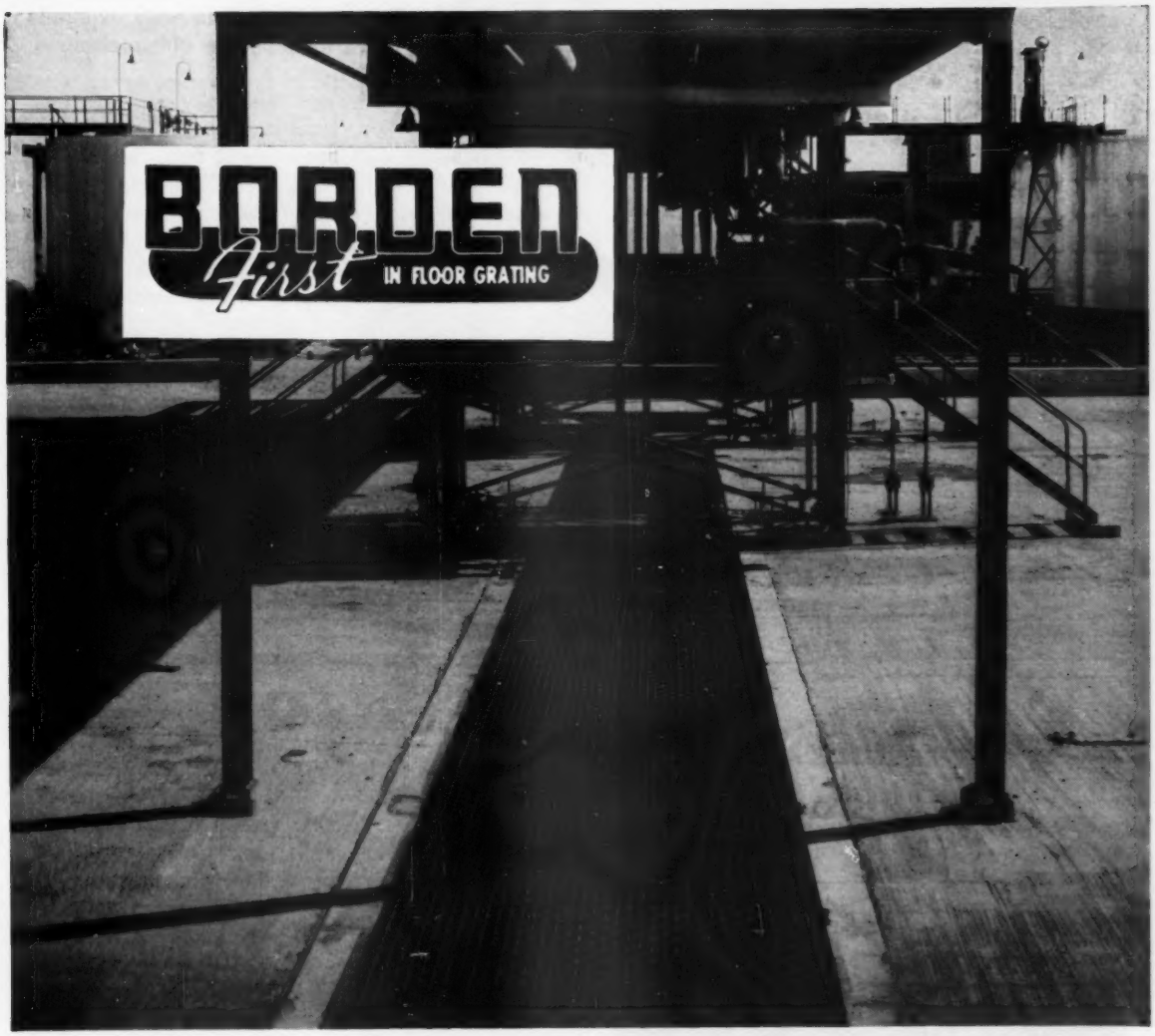
¶ Specialized experience in the field of activity for which the services are required.

¶ Past record in performing work for ICA, for other government agencies, and for private industry, including performance from the standpoint of costs, quality of work, and ability to meet schedules.

¶ The firm's volume of work with ICA in previous years and the extent of other work currently being handled by the consulting firm.

¶ Ability to assign an adequate number of qualified key personnel from the firm's own organization, including a competent supervising representative having experience in responsible position on work of a similar nature.

¶ The portions of the project work the firm is able



BORDEN MANUFACTURES EVERY TYPE FLOOR GRATING

IN FERROUS AND NON-FERROUS METALS

- **EASY TO INSTALL** — engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** — reinforced, designed with maximum safety factor.
- **LIGHT WEIGHT** — approximately 80% open, reduces dead weight, allows greater live load.
- **SELF-CLEANING** — creates greater safety, economy of maintenance, no sweeping or washing required.

Write for complete information on BORDEN All/Weld, Pressure Locked, and Riveted Floor Gratings in this FREE 8-page catalog

BORDEN METAL PRODUCTS CO.

817 GREEN LANE ELizabeth 2-6410 ELIZABETH, N. J.

Plants at Union, N. J. — Leeds, Ala. — Conroe, Tex. — Beeton, Ontario

BORDEN METAL PRODUCTS CO.

Gentlemen:

Please send me BORDEN Catalog

NAME .....

TITLE .....

COMPANY NAME .....

ST. AND NO. .....

CITY AND STATE .....

to perform with its own forces—and when required.
¶ Ability of the firm to furnish or obtain required materials and equipment.
¶ Financial resources and familiarity with the area in which the project is located.

Engineering and architectural firms desiring to perform services for ICA should file their qualifications with the Office of Industrial Resources if they have not already done so. Even firms currently listed with ICA should periodically check to assure that the information on file is up to date.

Tax Amendment

During the 1958 session Congress passed amending legislation to the tax code which should interest consulting firms, particularly corporations with not more than 10 shareholders. The law now specifies that, at the election of the stockholders, corporations are permitted to forego payment of any tax and instead require shareholders to report the corporate income (whether or not distributed) as their own for tax purposes. In effect, this makes the small corporation equivalent to a partnership for tax purposes. For full details, read "Lower Taxes for Small Corporations" starting on page 108.

Good Year Ahead

Indications are that the business economy will not only be strong and healthy in the last quarter of 1958, but during the first quarter of 1959 as well, government economists claim. Construction activity this year has kept pace with record-smashing 1957. Federal, state, and local spending on highways for the present calendar year will total an estimated $6.2 billion. This is expected to soar to $7.1 billion in 1959, $7.3 billion in 1960 and $7.7 billion in 1961.

REA Appropriations Up

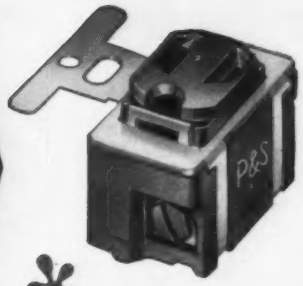
Though there was plenty of debate, Congress left the Rural Electrification Administration untouched. By this inaction REA won a victory and is preparing to pour a record amount of money into loans and operating funds.

Total REA appropriations for the current fiscal year (ending June 30, 1959) will exceed $394 million—$179 million more than originally planned. The Bureau of the Budget says the big increase is because legislation proposed by President Eisenhower to encourage private financing of the REA loan program and reduce Federal financing was not enacted. The agency's new spending authority is $146 million greater than a year ago.

Chamber of Commerce Conference

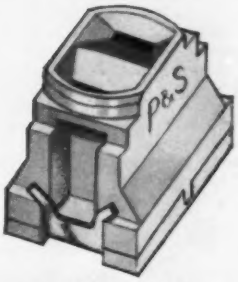
One of the most serious problems facing big cities since World War II is urban blight and decreas-

3 NEW DEVICES IN THE P&S DESPARD LINE



(No. 1332 Grounding Outlet)
(No. 1432 Ivory)

(No. 1374 Neon Pilot Light)
(No. 1474 Ivory)



(No. 1425 Single Outlet)
(No. 1325 Brown)

* *Including* A NEW GROUNDING OUTLET

Now the wide range of P&S-Despard wiring devices is extended for even greater versatility with the new grounding outlet No. 1332. Nos. 1325 and 1374 have pressure terminals. Like all P&S-Despard units, they're thoroughly tested for long dependable life. A turn of the cam on the Despard Camstrap quickly locks-in combinations of any two or three Despard units. Custom-make your installations to meet the specific needs of your wiring job—with the original and complete P&S-Despard line.

Send for catalog page on these new devices, Dept. CE1158

P&S®

PASS & SEYMOUR, INC.
SYRACUSE 9, NEW YORK
60 E. 42nd St., New York 17, N. Y. 1440 N. Pulaski Rd., Chicago 51, Ill.
In Canada; Renfrew Electric Limited, Renfrew, Ontario

MAKE THE COMPLETE JOB *COMPLETELY* P&S

ing importance of downtown areas. To seek a solution the U.S. Chamber of Commerce is sponsoring an important national conference in Washington November 24 and 25. Architects, engineers, city planners, business and professional people from all over the country will attend. Some engineers and architects will appear on panels and tell how communities can revitalize their sagging downtown areas and meet the multiplying problems of expanding metropolitan areas.

Congressional Hopper

Reimbursements to utilities for relocation of their facilities would be prohibited under bills expected to be introduced during the 86th Congress next year. However, proposals to limit reimbursements to utilities meeting specified requirements would probably get some support among lawmakers.

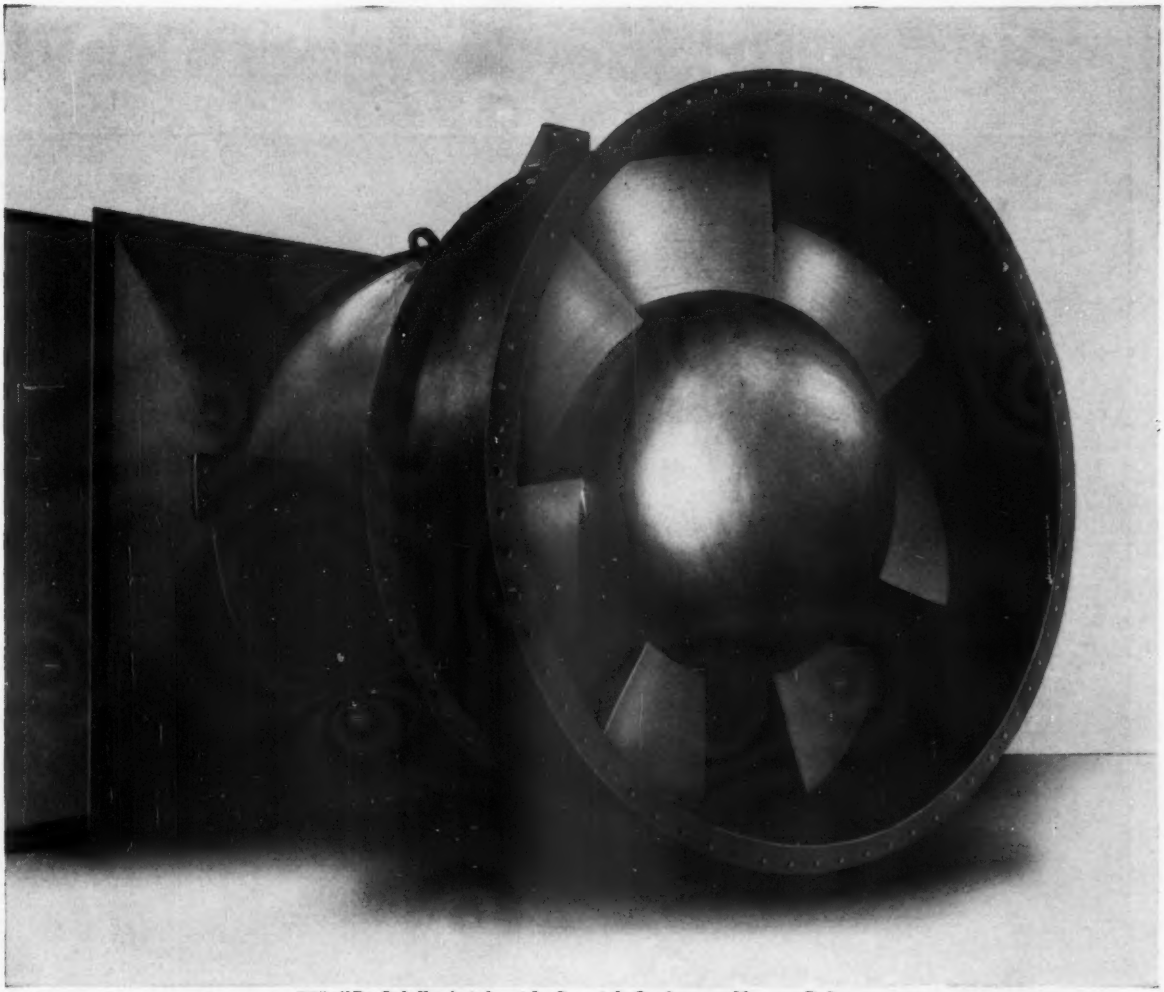
One such bill would allow payments only to utilities which have a "property right" on the right-of-way of a new highway. Senator Langer, North Dakota Republican, introduced a similar proposal in the closing days of the 85th Congress, but no action was taken on it. He is expected to introduce it again.

¶ The Jenkins-Keogh bill which passed the House but died in the Senate appears certain to be reintroduced in the next Congress. Under this measure consulting engineers and other self-employed persons could deduct 10 percent of their earnings each year (not in excess of $2500 annually) for 20 years, or up to $50,000 during their lifetime, to support voluntary retirement plans.

¶ The proposed $500 million civilian airport construction bill, vetoed by President Eisenhower in the final days of the session, will be reintroduced in the next session. The measure would have boosted the authorized Federal aid program from $63 million a year to $100 million and would have extended it four more years. Sponsors say they will press for its enactment next year. Air passenger and cargo traffic has tripled in the past 12 years, and the "jet age" will bring many new problems. (For news about how consultants are helping airports meet the jet age, be sure to read "Airport Engineering" starting on page 82.)

¶ Army engineers will direct the spending of a record amount for public works projects under an appropriations bill approved by Congress. The bill earmarked $808,622,500 for the Engineers, with an additional $225,577,335 for the Bureau of Reclamation (which includes funds for TVA and other public power authorities). Approximately 80 percent of the appropriations earmarked for the Engineers will be devoted to construction.

Other appropriations provide $1,353,850,000 for huge new military construction—a peacetime record—and $785 million for Air Force projects. ▲▲



78" "Buffalo" Axial with Special Outlet as Shown Below

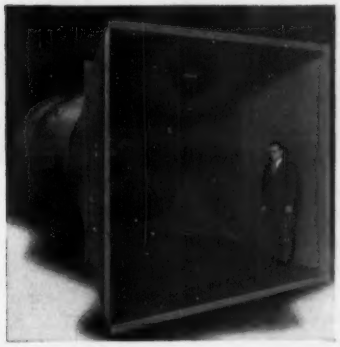
WANT MAXIMUM EFFICIENCY IN AXIAL FLOW FANS? BE SURE TO SPECIFY "BUFFALO" AXIALS

When your air moving jobs call for axial flow fans, investigate the many advantages of "Buffalo" Axials. Highest efficiency in a wide range of sizes is one. Other advantages are extremely quiet operation and rugged yet lightweight construction.

In the "Buffalo" engineered wheels, blade pitch changes to give uniform air flow over the entire blade. The large, correctly shaped hub prevents the re-entry losses common to ordinary axial flow fans. Carefully designed guide vanes convert swirling air at the outlet into productive forward thrust.

Space-saving "Buffalo" Axial Flow Fans are duct-size, fit in close to walls or ceilings. Thus they are ideally suited to a wide variety of ventilating, drying, cooling and exhaust applications.

If your plans require axial flow fans, be sure of *maximum efficiency* — specify "Buffalo" Axials. Call your nearby "Buffalo" engineering representative, or write for Bulletin 3533-EF.



All "Buffalo" fans feature the important "Q" Factor — the Built-in QUALITY that provides trouble-free satisfaction and long life.

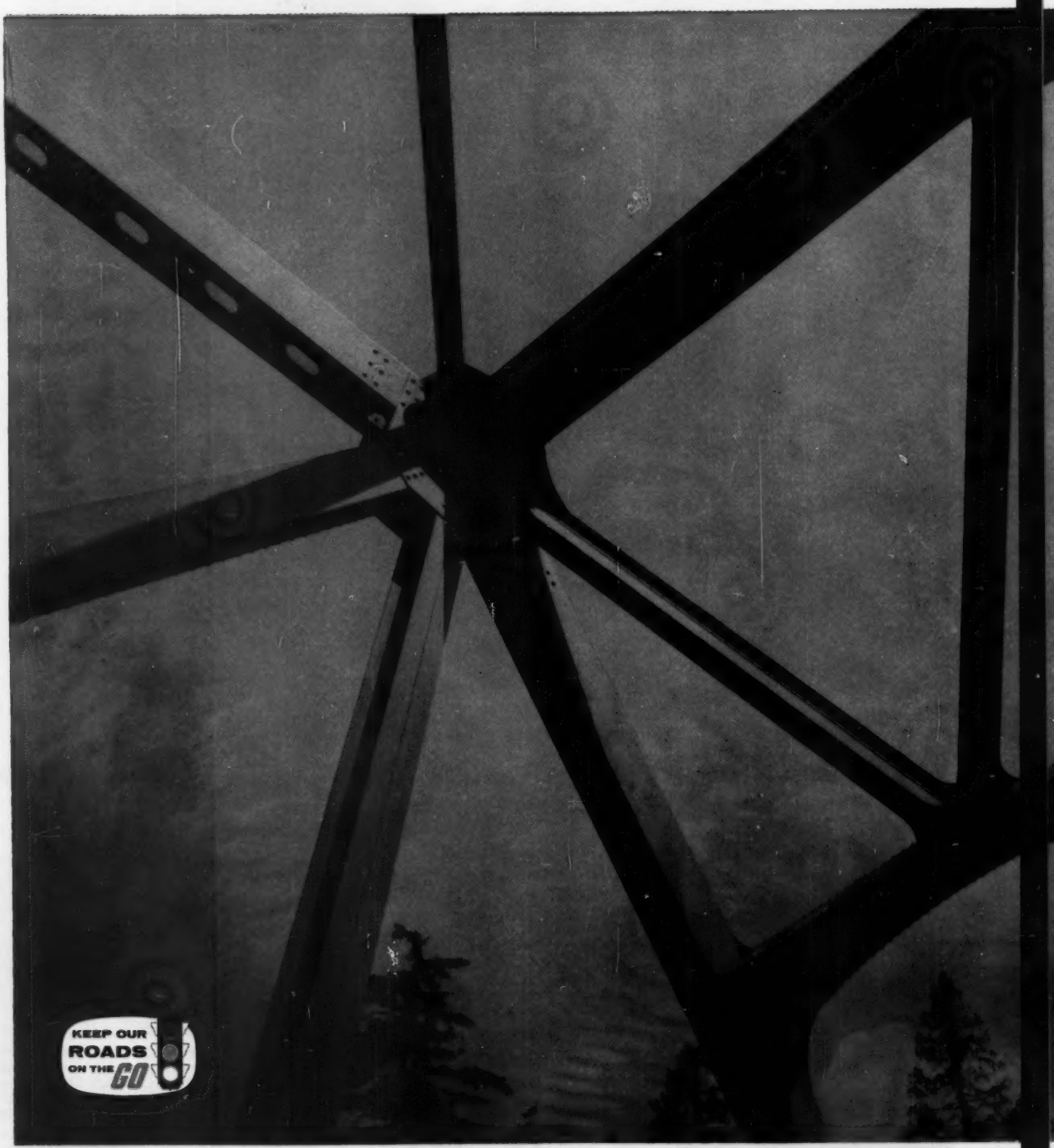
BUFFALO FORGE COMPANY
Buffalo, N. Y.

Buffalo Pumps Division, Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

VENTILATING AIR CLEANING AIR TEMPERING INDUCED DRAFT
EXHAUSTING FORCED DRAFT COOLING HEATING PRESSURE BLOWING

Bridge designers save



The 1,020′ Agate Pass Bridge is of through cantilever truss construction, built with 1,561 tons of steel. 650 tons are USS COR-TEN Steel, a high-strength low-alloy steel that eliminated 300 tons of dead weight and saved $87,000 in total steel costs.

$87,000 with USS COR-TEN Steel

in the Agate Pass Bridge

WHEN YOU BUILD with a stronger steel, you need less steel. That's why this bridge was built with USS COR-TEN Steel chords, floor beams, diagonals and verticals. Because COR-TEN Steel is 50% stronger than structural carbon steel, the members are thinner. According to estimates by the State of Washington, Dept. of Highways, COR-TEN enabled a total weight elimination of 300 tons of steel—an $87,000 saving.

USS COR-TEN Steel has a minimum yield point 50% higher than that of structural carbon steel, and in thicknesses of ½" and under it meets all the requirements of ASTM Specification A242 for High-Strength Low-Alloy Steels. On this bridge, the COR-TEN Steel members are about one-third lighter than carbon steel would be if used in the same locations. Dead weight was materially reduced, freight costs were lower, and construction was easier. And, since COR-TEN Steel has 4 to 6 times more resistance to atmospheric corrosion than carbon steel, the Agate Pass Bridge will stand up better under the corrosive salt air of this area.

For more information about weight-saving, economical construction with USS High Strength Steels—COR-TEN, TRI-TEN, and MAN-TEN—write for a copy of our "Design Manual for High Strength Steels," United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS, COR-TEN, MAN-TEN *and* TRI-TEN *are registered trademarks*

The Agate Pass Bridge • Owner: State of Washington • Designer: Department of Highways, State of Washington • Contractor: Manson Construction & Engineering Co. • Fabrication and Erection: American Bridge Division, United States Steel

United States Steel Corporation – Pittsburgh
American Steel & Wire – Cleveland
Columbia-Geneva Steel – San Francisco
Tennessee Coal & Iron – Fairfield, Alabama
United States Steel Supply – Warehouse Distributors
United States Steel Export Company

USS United States Steel

Field Notes

MARJORIE ODEN
Eastern Editor

A NEW YORK consulting engineer recently decided to expand his staff and advertised for everything from draftsmen to top project engineers. Approximately 100 engineers answered the ad. Of these, five met the qualifications of the consultant and were hired. It would seem that herein lies the story of the "engineering surplus."

Current Statistics Misleading

However, William T. Cavanaugh, executive secretary of the Engineering Manpower Commission, feels there are many fallacies in the unemployment picture. Granting that the Engineering Societies Personnel Service currently lists more than 3000 engineers available for employment, Cavanaugh said, "I think you will find many of these are from more traditional jobs. Often these men have worked all of their lives in just one job – the auto industry, for example. Deeply committed to a specialty, some of these men have engineering experience that is not transferable without additional education.

"As a result, there is a certain amount of technical obsolescence reflected in today's employment statistics. And in this space age, the problem of engineers outliving their jobs is going to get worse before it gets better."

No "Stockpiling"

Today's employment situation also uncovers some other fallacies about the engineering surplus. "Looking around, it is obvious that the stories of 'stockpiling' of engineers were highly exaggerated," Cavanaugh pointed out.

At one time popular belief held that many large industries were hiring more engineers than they could use in professional positions. If this had been true, the current economic slump would have resulted in scores of good engineers for hire. Yet this did not happen.

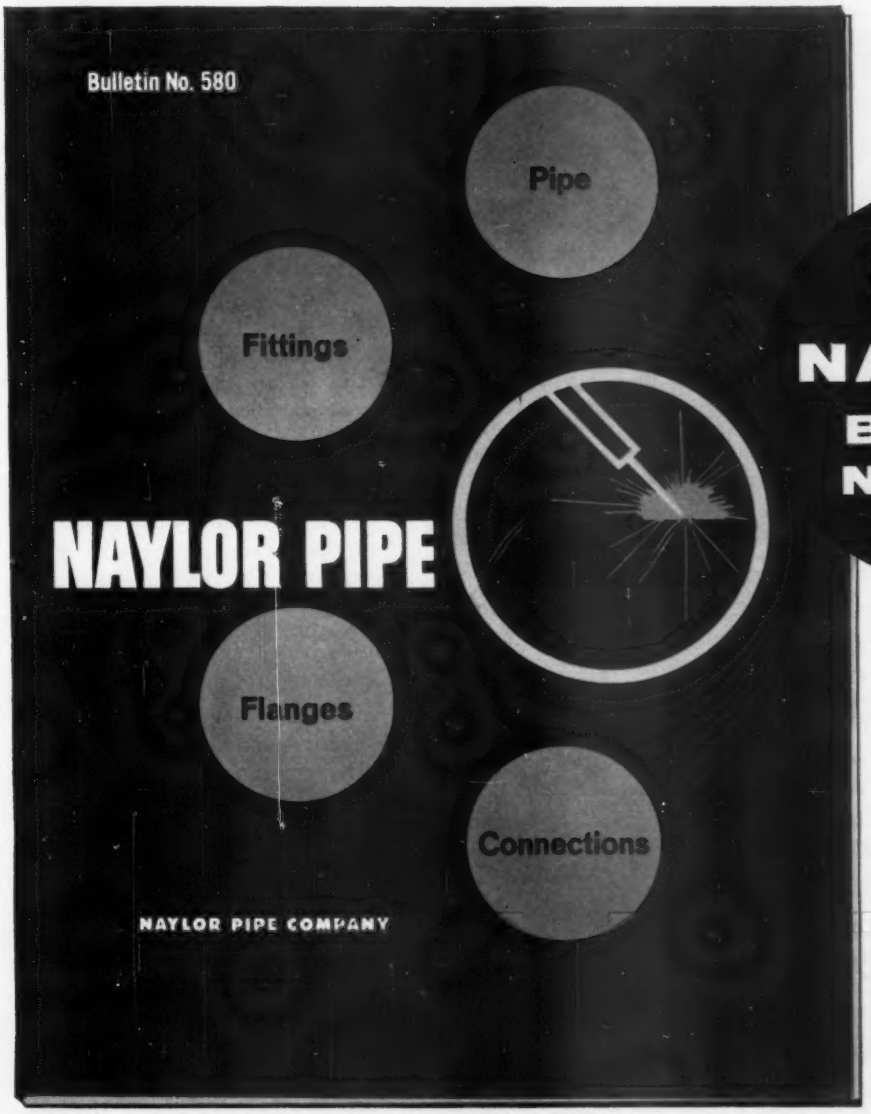
"Obviously, there weren't many engineers sitting around playing pinochle and being paid by firms with defense contracts. The companies keeping so many engineers on the payrolls showed each man was contributing to the success of his firm," Cavanaugh continued.

Engineers Transferred

Of course, it is widely known that the aircraft industries removed the surplus from their engineering departments when defense contracts were canceled last year. Contrary to public opinion, the aircraft companies knew for almost a year that they were going to lose certain contracts. For months prior to the cancellation, good engineers quietly were transferred from the dying projects and replaced by less-qualified engineers, hired when personnel was scarce.

Then, when public announcement of these defense contract cancellations was made, the aircraft companies – victims of circumstances – laid off all employees working on those projects. At the

Helps ANSWER Your PIPE PROBLEMS



Write for NAYLOR Bulletin No. 580

Here in concise form is helpful data covering NAYLOR pipe, fittings and connections for use in the construction field. Bulletin No. 580 includes standard specifications on NAYLOR Spiralweld pipe in sizes from 4" to 30"; standard fittings and welding flanges carried in stock; NAYLOR Wedgelock couplings and all types of connections to meet pipe line needs. Write for your copy today.

NAYLOR PIPE Company

1276 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.

same time, Cavanaugh said, at least one of the aircraft companies received a contract as large as the canceled defense work. No public announcement was made of this.

For a while, it seemed scores of engineers were wandering around the country without work. In reality, Cavanaugh said, the aircraft industry, and others, had been hiring "less than qualified" personnel and then giving them the title "engineer." Many of those who were laid off would not be classified as engineers by Founder Society standards.

"This was not the fault of union classification," Cavanaugh added. "It was the fault of management which for good reason tried to build up an engineering department faster than the supply of qualified men would allow."

So statistics do lie. There is not a surplus of engineers qualified to work for consultants, and Cavanaugh said the time for consultants to start doing something about getting future employees is now, if not yesterday. "It's not a question of if, but when, we will have an impossible situation on our hands."

The story began in the early 1950s when the technological requirements of the Cold War were superimposed on a fast-moving civilian technology. The emphasis throughout government and industry was on young engineering talent. The space age merely has intensified the trend.

Engineer Shortage Ahead

"The present U. S. employment picture is a tip-off such as I have never seen to predict a serious shortage of engineers," Cavanaugh said.

"The softening of the national economic picture during the past year was more serious than engineering employment statistics would show. In fact, that is the real clue to the true situation. With business cutting back on expenditures and the government limited to a $38-billion ceiling, the Engineering Manpower Commission

had expected to see quite a reduction in college recruitment and hiring of engineers.

"Yet this didn't happen. While the poor student had, perhaps, more difficulty than usual in getting a job on his own terms this year, competition still was keen for the top men in the class.

"And I would strongly advise any consulting engineer who has an opportunity to hire a talented young man to snap him up. Within six months, he may not have these opportunities again."

Cavanaugh pointed to the wage picture as another indication of the long-range situation. If a surplus of engineers existed, salaries would drop. Yet the income of skilled persons has remained relatively remote from the economic picture. The recession has mainly hit the unskilled and semiskilled worker.

By 1965, Cavanaugh believes, the gross national product will reach about $580 billion, an increase of 37 percent over this year. But the total labor force will increase by only 12 percent, and the number of male workers in the 25 to 35 age group will stay almost constant. This obviously will require new technological advancements, and clearly shows the future demand.

Chemical Trend Downward

In individual fields of engineering the picture will differ. Cavanaugh offered this breakdown:

¶ Civil engineering – remain fairly constant in the number of graduates, but slip in the total percentage of engineering students enrolled.

¶ Mechanical – no change. Still has about 20 percent of total enrollment, 25 percent of the graduates.

¶ Electrical – shows a steady growth from 20.6 to 25.1 percent of enrollments, and from 20.7 to 27.7 percent of the graduates.

¶ Mining – always a small number of the total engineering graduates. The number enrolled is remaining constant, but the percentage of graduates is dropping.

¶ Chemical – a more serious situ-

ation. Total enrollment at this time is lower than it was in the school year 1942-43. Shortages in related fields, such as metallurgy, are eating into the supply.

The answer to the shortage? "Until we can change markedly the butterfat content of milk, getting more cream will require the processing of more whole milk," Cavanaugh answered philosophically.

Already, a higher percentage of the talented and more intelligent youth is going to college than many realize. And engineering is getting a good share. In 1956 and 1957, 28 percent of the 1012 male winners of National Merit Scholarships, for example, said they wanted to become engineers.

Awards for Mediocre Students

"If we require a scholarship program at all, we need it for the mediocre students," Cavanaugh said. These often lack the incentive and motivation that the more intelligent student innately has. The smarter student, with scholarships and by working his way, will manage to further his education.

"Education has become a political football in this country," he added. "Educators have known a long time that a high percentage of college students were wasting their time. It is not a matter of finding this out, just a matter of having the social courage to carry out these findings.

"Try telling a socialite mother that her son does not have the intelligence to pay either the family or the school for the money and space required to give him a college education."

Graduate Study Economics

Most engineering educators realize that more graduate study is needed by newcomers to the profession.

"But the economies of doing graduate work are too far out of balance," Cavanaugh pointed out. A youth with a bachelor's degree can get a starting salary of $5000 to $6000 a year. Getting a doctorate

you design it...

CYCLOTHERM will fit it!

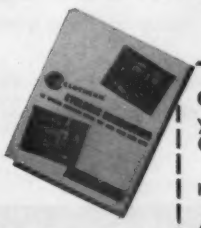
Here's a steam and hot water generator that gives the architect full freedom in boiler-room design. It's Cyclotherm—the low-slung, ground-hugging boiler with its long axis parallel to the floor and very little headroom or lateral space needed. Saves one-third the space that even other package boilers may require. With Cyclotherm you can plan for the future by allowing space for an additional boiler when plant expansion calls for more power.

And there's no stack with Cyclotherm! You know how often an otherwise pleasing structure is defaced by an unsightly stack. Stacks cost thousands of dollars, too. But Cyclotherm operates with only a simple flue. It costs little to install a Cyclotherm—no special foundation, no excavation. Just set it on the floor and it's ready to go to work.

Guaranteeing at least 80% efficiency in only two passes, Cyclotherm brings substantial savings in both fuel and maintenance costs. It is fully automatic, completely safe and accords with ASME and Underwriters' Laboratories specifications. For full information, write Cyclotherm Division, National-U. S. Radiator Corp., today.

YEARS AHEAD IN STEAM GENERATION
CYCLOTHERM®
STEAM AND HOT WATER GENERATORS

Cyclotherm Division,
National-U. S. Radiator Corp.
57 E. First St., Oswego, N. Y.



Gentlemen. Please send me, without cost, your complete new Cyclotherm booklet: *Cyclotherm Cyclonic Combustion.*

Name.....

Address.....

City..... State.....

costs an estimated $14,000. Yet the starting salary with the higher degree is only about $8000 a year.

"The consulting engineer, if he would take advantage of it, has a greater chance than industry or government of getting the top talent from each graduating class. This is the only field in which an engineer can hope to be professionally unrestricted," Cavanaugh said. "And yet, the consultant is not taking advantage of what he has to offer."

Unless the consulting engineer intends to be content with hiring the students who are left after everyone else has made his selections, the time to act is now.

In Cavanaugh's opinion, the situation is going to be serious enough in the very near future to warrant consultants banding together and conducting a concerted educational campaign among college students to "sell" the profession's advantages.

"I wouldn't worry about a public relations program on the high school level," Cavanaugh said. (Already the government and many of the Founder Societies are working to interest the high school student in engineering.) "Even college freshmen are not ready to decide definitely that they want to go into the consulting field. Wait until they are sophomores or juniors. Then they are mature enough in judgment to be thinking in career specifics."

The consultant also should consider seriously any recruitment operations on a five-year plan, rather than a year-to-year basis. This would avoid the fluctuations that result from hot and cold recruitment emphasis.

"It is my considered judgment that those who see in the events of the past 10 months anything but a traditional temporary dip in a long ascending curve are erring seriously in a direction that – all things considered – could do grave damage in a national as well as in an individual corporate sense," Cavanaugh concluded. ▲▲

Can you find the Pritchard LoLine cooling tower in this picture?

Chances are it will take more than a cursory glance to spot the Pritchard LoLine Cooling Tower in the picture. That's because it is low . . . hugs the roof inconspicuously . . . becomes almost a *part* of the building. It is particularly suited for use where architectural considerations are important.

Yet the Pritchard LoLine tower is a workhorse. Its sleek appearance takes nothing away from its performance. Available in capacities of 75 tons and up, it will handle most commercial and industrial cooling requirements with ease. Initial, operating, and maintenance costs are low, too.

So whether your main concern is aesthetics or performance, air conditioning or process cooling, commercial use or industrial use, there is a Pritchard cooling tower that will fit your needs to a "T."

For full information on Pritchard LoLine Cooling Towers, send coupon for informative 16-page bulletin.

J. F. PRITCHARD & CO.
OF CALIFORNIA
Dept. 109,
4625 Roanoke Pky., Kansas City 12, Mo.

Please send Bulletin 5.1.902 on LoLine Cooling Towers

Name..... Title.....

Firm.....

Address.....

City..... Zone..... State.....

Beyond Our Borders

PARALLELING their government, French consulting engineers have adopted a new constitution for their Association. "The French often seek to adapt their constitutions to life which evolves so rapidly," writes M. Fernand Ernstein, board member of the Association.

Now the Association (Chambre des Ingenieurs-Conseils de France) is divided into four groups, each enjoying a certain autonomy. The groups are delineated by the work and clientele of the consultants. Although interested in activities of other groups, the member consultant selects the group that corresponds to most of his activities, much as our Founder Societies' members select divisional affiliation.

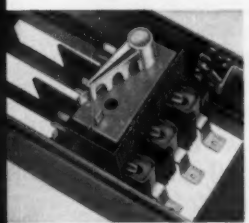
¶ The first group, "Public Works," includes engineers whose principal clients are national, province, and community bodies. Consultants in this group are concerned with roads, city planning, and water, gas, and electric utility systems. A recent government decree compels the provincial public works departments to select consulting engineers in accordance with a departmental roster of approved firms. The decree aims at getting competent and independent consultants for these public works. The main activity of the group this year has been applying this decree despite the resistance of some public officials.

¶ The second group, "Civil Building and Engineering," includes all engineers who design and specify

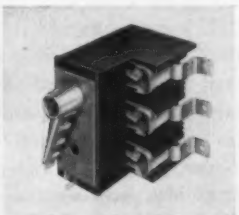
Now QMQB Fusible Switches

- **QUICK-MAKE, QUICK-BREAK**
- **30 THROUGH 1200 AMPS**
- **VISIBLE BLADE CONSTRUCTION**

FOR PANELBOARDS, SWITCHBOARDS, CONTROL CENTERS—heavy-duty design meets modern industry's increased power handling requirements—30 through 1200 amperes, 600 volts—the most complete line available! U.L. approved. For complete information on QMQB units and panelboards, write for bulletin 3-230: Federal Pacific Electric Company, General Offices: Newark, New Jersey.



VISIBLE BLADES FOR MAXIMUM SAFETY—Lets you see at a glance whether switch is "ON" or "OFF"—makes inspection easy. Silver-alloy contacts insure positive connections—reduce wattage loss.



INTEGRAL HANDLE MECHANISM FOR GREATER CONVENIENCE—handle mechanism and switch are combined in a single unit—eliminates excess linkage—prevents misalignment and false indication of switch position.

DEIONIZING ARC QUENCHERS FOR COOLER, FASTER INTERRUPTION—eliminate pitting and provide higher interrupting ability. Arc is divided, cooled, and extinguished in the quencher, rather than on the contact surfaces.

HIGH PRESSURE FUSE HOLDERS FOR LONG LIFE, RELIABLE SERVICE—grip the fuses tightly under constant spring pressure—reducing contact resistance for cooler, more efficient switch operation—even under varying loads.

LOCKING PROVISION FOR ADDED SAFETY—cover may be locked in either "ON" or "OFF" position with as many as three full-size padlocks to prevent unauthorized access. Additional provision for padlocking cover.

FEDERAL FPE PACIFIC

The Best in Electrical Distribution and Control Equipment

in connection with construction and equipment of buildings. The largest group in the association, its members specialize in reinforced concrete work, metal construction, heating, sanitation, plumbing, electricity, and soundproofing. The group has the best defined fee schedule, which it respects fully. Members currently are much concerned with area development and large housing projects, both public and private.

Members of this group face a serious problem in that they must compete with large government technical bureaus and engineering staffs which operate almost on a commercial basis.

¶ The third group, "Industry and Agriculture," includes engineers not in any of the preceding groups, plus industrial consulting engineers—in metallurgy, chemistry, electrical and mechanical fields for example.

Under the presidency of Ernstein, this group concentrates on questions of interest to the entire profession. In concert with other professional associations (lawyers, doctors), it has been studying the tax question and fighting for fiscal justice (lower taxes) for engineers.

Surprisingly, the group also is concerned with developing French economic and tourist resources.

¶ The fourth group is made up of engineers whose principal activity pertains to judicial and civil surveys (or reports) and advisory work not associated with construction. It has published a brochure describing the work and capability of the French consulting engineer.

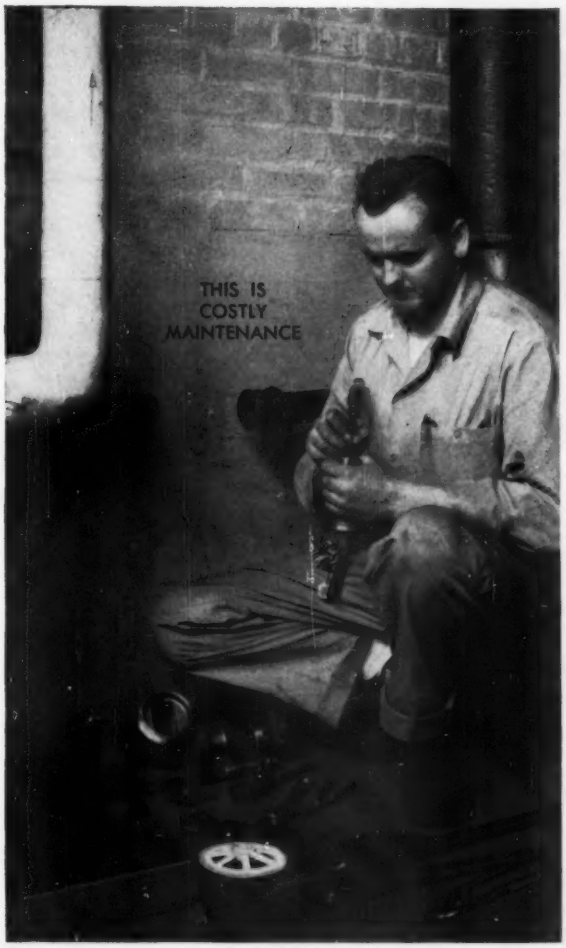
Bridge to Prince Edward Island

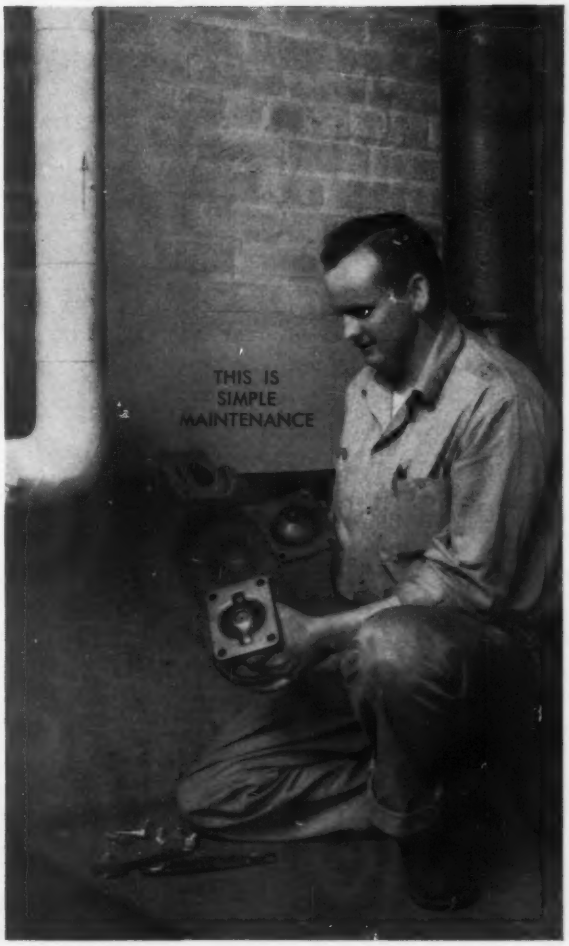
Two Canadian consulting firms—Canadian-British Engineering Consultants, Toronto, and C. B. A. Engineering Limited (Canadian Bureau of Allied Consulting Engineers Ltd.), Vancouver, have been retained by the Canadian government to investigate a road and rail line between Prince Edward Island and New Brunswick. For the project only, the two firms have formed a partnership to be known as C. B. Joint Venture.

Project agent for liaison with the government will be Colonel A. A. Anderson of Ottawa. Representatives to the consultants concerned particularly with this investigation are L. K. Templeman-Kluit, Vancouver, and C. P. Lowe, Halifax.

Dr. H. Q. Golder has been appointed project engineer and H. Oudshoorn, deputy. Four more engineers are being provided by the joint consulting engineers but all other engineers for this preliminary study will be drawn from local sources.

A crossing at the Northumberland Strait narrows has been considered in the past. One of the earliest proposals was for a railroad tunnel under the Strait. Many bridges have been proposed. ▲▲

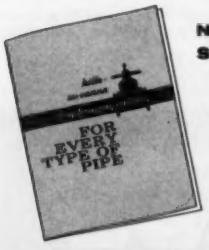




You NEVER have to remove a Hills-McCanna valve body!

When Hills-McCanna Diaphragm Valves are installed in a line they are as permanent as an elbow. The valve body is never removed from the line even for maintenance. Unions are not required. Ordinary tools are used to take the bonnet off and expose the diaphragm for quick replacement—a simple procedure that virtually provides a new valve for another period of long service!

Packless design of Hills-McCanna Diaphragm Valves assures good housekeeping, eliminates dripping, cleaning. There's no leakage, no seats to grind. But simplified maintenance is only part of the Hills-McCanna story—get all the facts on positive flow control, valve bodies to match construction materials of any pipe or pipe lining. Write for new booklet offer below.



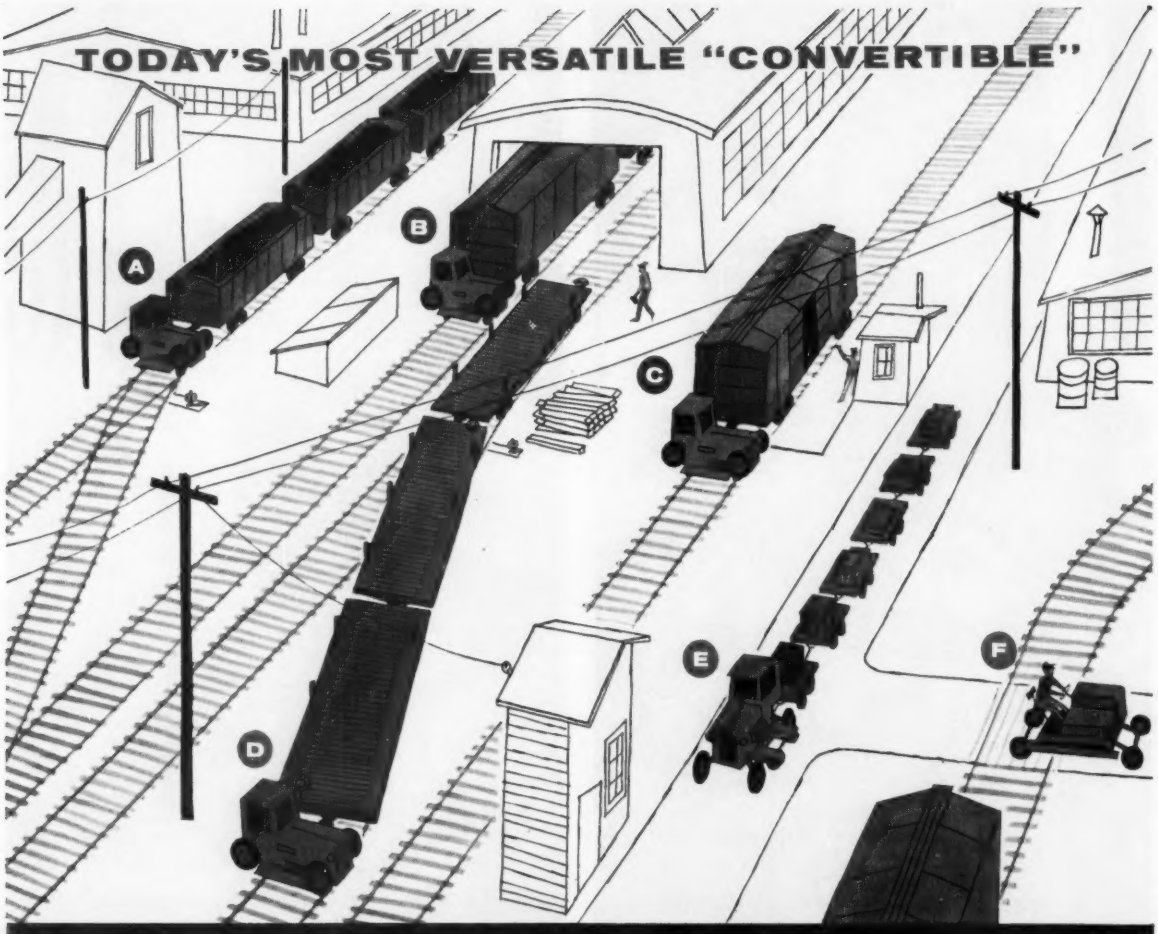
NEW BOOKLET GIVES INSIDE STORY ON VALVE SELECTION...

This helpful guide discusses primary considerations in selecting valves, shows engineering principles and benefits of the Hills-McCanna Diaphragm Valve and applications. Write for your free copy today—"Diaphragm Valves for Every Type of Pipe."

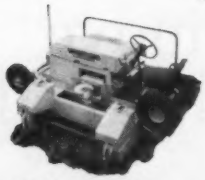
HILLS-McCANNA COMPANY
4575 W. Touhy Avenue, Chicago 46, Illinois

hills-mccanna company
THE PEOPLE WHO KNOW AND CONTROL FLOW

TODAY'S MOST VERSATILE "CONVERTIBLE"



3 Models to Meet Your Specific Needs



2TM Trackmobile

3TM Trackmobile

5TM Trackmobile

All three models of the Whiting Trackmobile switch, spot and haul freight cars fast and at low cost. Trackmobile converts from road to rail in seconds to facilitate car handling, makes your operation more profitable. Here are just a few of the many ways you might use "Today's Most Versatile Convertible":

- **A** New 5TM torque converter Trackmobile quickly switches fully-loaded coal cars.
- **B** Railroads are big Trackmobile boosters—use them to shuttle cars in and out of repair shop.
- **C** 3TM Trackmobile is on the job rain or shine. Here it spots a freight car with pin-point precision.
- **D** 3TM Trackmobile returns empties or loaded cars to siding, positions cars where they're needed, frees plant from dependence on switch engines.
- **E** No freight cars to move at the moment, so 5TM converts to road wheels to haul carts.
- **F** Trackmobile can travel "cross-country" on rubber tires to where it's needed. Now this 2TM will convert to steel rail wheels in seconds.

SEND FOR TRACKMOBILE FACT FILE—Illustrated folders on all three Trackmobile models. See which one meets your needs best. Whiting Corporation, 15620 Lathrop Avenue, Harvey, Illinois.

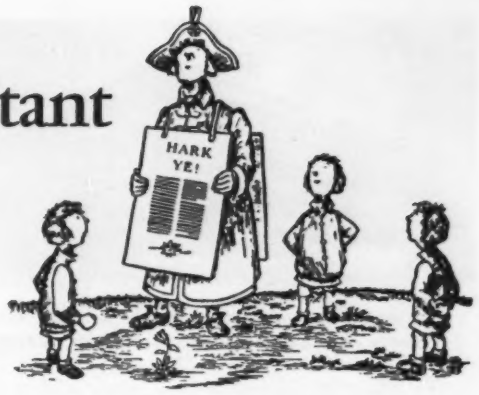
87 OF AMERICA'S "FIRST HUNDRED" CORPORATIONS ARE WHITING CUSTOMERS

WHITING

TRACKMOBILE

MANUFACTURERS OF CRANES; TRAMBEAM HANDLING SYSTEMS; TRACKMOBILES; FOUNDRY, RAILROAD, AND CHEMICAL PROCESSING EQUIPMENT

News for the Consultant



New Office Building for Reynolds Metals

Reynolds Metals Company's new $11.5-million general office building in Richmond, Virginia contains over 600 tons of aluminum and includes the world's largest system of automatically controlled sun louvers. Ebasco Services Incorporated did the compete engineering design; Skidmore, Owings and Merrill was the architect.

The completely air conditioned glass and aluminum-walled four level structure, containing nearly 300,000 square feet of usable floor space, is supported on concrete piles. The two lower levels are of reinforced concrete. Upper levels are structural steel frame, fabricated and erected to close tolerances to accommodate the extruded aluminum covers and trim.

Basic structural system of the upper floors and roof consists of 62-ft long-span joists supported by window mullions on 5-ft 2-in. centers. Metal floor panels are welded to the top chords of the joists forming a stiff diaphragm which carries horizontal forces into the utility cores at the four corners of the interior court. No exterior wall columns are used. Cores are constructed of heavy steel columns and conventional beam and girder framing.

A zoned air system with booster heaters is incorporated. Perimeter heating is by hot water convectors in grilles under the glass panels. Ten separate fan systems taking air from a common plenum distribute it through soundproofed aluminum ducts.

The system of 880 aluminum sun louvers, each 14 ft high and 22-in. wide, substantially reduces

New executive headquarters for Reynolds features extensive use of aluminum in exterior, interior.

the heat load on the important east-west exposures. The louvers are controlled by an astronomical clock that will accurately anticipate movements of the sun through the year 2100.

Photogrammetry in Interstate Program

Lockwood, Kessler & Bartlett, Inc., Syosset, N. Y. consulting engineers, will design an 11-mile section of the 23-mile Western Expressway connecting Rochester to the New York Thruway. The toll free, four-lane limited access road, part of the interstate system, will bridge 10 existing highways and incorporate circular ramp interchanges to Routes 19 and 33. Extensive use of photogrammetry is planned to speed the design work on the highway section, estimated to cost $11 million.

Riverside Church is Air Conditioned

By using ducts with outlets located 100 feet above the floor from an air circulation system installed in 1928, consultants on the recently completed air conditioning project for New York City's famous Riverside Church saved their client considerable expense. The old system supplied unconditioned air to the nave through floor openings under the pews and exhausted the air through seven openings in the ceiling of the structure. The new system uses the same floor and ceiling openings with substantially the same ductwork, but air movement is in reverse.

The design problem faced by Meyer, Strong & Jones, mechanical and electrical engineers, was posed by the huge size of the nave – 200-ft long, 100-ft high, and 65-ft wide, with a 40-ft deep balcony – and the nearly 2000 attending worshippers. The new system provides an entering air temperature range of 17.5 degrees at 50,000 cfm to 25 degrees at an air flow of 35,000 cfm.

An additional problem that resulted from the stepped-up air flow and velocity concerned vibration of the downlight fixtures originally supported on steel mounts inside the exhaust duct connect-

Honeywell Supervisory DataCenter in Reynolds Metals Office Building, Richmond, Va., controls all ten of the air conditioning systems in the building.
Architect: Skidmore, Owings and Merrill; Project and Construction Managers: Ebasco Services Inc.; General Contractor: George A. Fuller Company; Mechanical Contractor: Huffman-Wolfe Southern Corp.; Electrical Contractor: E. C. Ernst, Inc.

ing the ceiling openings to an exhaust air shaft. New downlights had to be attached to the building frame independent of the duct work.

Grand Coulee Circuit Breaker

A short circuit test of 15-million kva, highest ever recorded in field tests, by the Bonneville Power Administration and U.S. Bureau of Reclamation recently was conducted on a mammoth new 230,000-volt circuit breaker at Grand Coulee Dam in Washington. The circuit breaker interrupted the fault current in about 1/20th of a second.

Paint, Varnish, and Lacquer Plant

Sherwin-Williams' new 250,000-sq ft paint products plant in Garland, Texas combines the most modern manufacturing equipment available with streamlined warehousing and shipping facilities. The $4-million factory will produce seven-million gallons of paint annually.

Ten buildings and three tank farms, with a capacity of 500,000 gallons of solvents and raw and processed oils, make up the complex. The buildings include a 50,000-sq ft four-story paint production building, a 40,000-sq ft raw materials warehouse, a 120,000-sq ft finished goods warehouse, a two-story air conditioned office and laboratory, a separate varnish production unit, a varnish and lacquer laboratory, and a lacquer blending plant.

Automated 25-acre Sherwin-Williams paint plant in Garland, Texas replaces outmoded Dallas facility.

Automatic controls, installed wherever feasible, monitor liquid flows and temperature during paint production. Ball mills are overhead-mounted, and portable mixers take care of small batch requirements. A system of movable troughs permits filling tanks from any of different grinding mills. Powered roller conveyors traverse the can filling areas and lead directly to the carton sealing operation.

Varnish production is on a 24-hour schedule. Three indirect-fired kettles with a daily capacity of 15,000 gallons of varnishes, treated oils, and resins are controlled from a central control panel. Vaporizer equipment and heating boilers are housed in an adjacent building. Lacquer and solvent blend-

ing is conducted in a special building with movable walls for ventilation.

All hazardous area lighting and electrical controls are explosion proof. An extensive water sprinkler system protects all buildings, with automatic inert gas dispensers located in special areas.

Design and supervision of construction was by Turnbull, Inc., consulting engineers of Cleveland, Dallas, and Washington.

Progress Report on Lighting

The 1958 progress report of the Illuminating Engineering Society traces the increased lighting levels in plants, offices, and homes, and presents important new developments in lighting.

The report points out that illumination levels were between 10 and 100 footcandles in 1952. Today the average is above 100, with many applications of 200 footcandle level. By 1968, current averages are expected to double. If the current rate continues, some outdoor installations will match the illumination of the sun – 10,000 footcandles – by the year 2020.

Significant developments in lighting technology during 1957 include:

¶ A new mercury vapor lamp cathode providing 90 percent of original light output after 6000 hours. Elimination of "blacking" of the lamp with use by creating a white deposit which reflects rather than absorbs light is the key principle.

¶ An extremely reflective evaporated metallic coating for lighting fixtures. The coating's base is plastic, and it can be formed easily to fit almost any lighting design.

¶ New 8-ft fluorescent street lighting luminaires designed to be mounted parallel to the roadway to reduce glare.

¶ Battery-powered marine buoy equipped with incandescent two-filament bulb. The low-voltage filament automatically takes over from the high-voltage filament when the battery voltage drops. This device was designed to assure continuity of lighting at remote installations.

Titan, Atlas, Thor Training Facilities

Daniel, Mann, Johnson & Mendenhall, Architects and Engineers of Los Angeles, will establish criteria, plan, design, and engineer new ICBM and IRBM missile training facilities for the Air Force's Air Training Command. Estimated to cost $11 million, the facilities will train personnel in operation of Titan, Thor, and Atlas ballistic missiles. They will be located at Keesler AFB, Miss.; Sheppard AFB, Texas; and Chanute AFB, Ill.

Keesler AFB will be the electronics training center and will include instructions in the opera-

tion, maintenance, and repair of missile guidance systems. A 55,000-sq ft training building and a 100-ft high bore sight tower will be erected. Sheppard AFB will get a 200,000-sq ft instruction and maintenance building. Of two-story masonry construction, the building is windowless and air conditioned. Simulated operational launch emplacements for each of the missiles will be provided. Training in missile power plant operation and fueling will be furnished at Chanute AFB. Here will be constructed a 75,000-sq ft training building, a liquid-oxygen generating plant, and rocket engine test stands. Site development and all roads, streets, and utilities are included in the contract.

DMJM was one of the first consulting firms to enter the missile facilities field. They have designed North American Aviation's Hot Test Acceptance Facility in Santa Susana, California; Convair's Atlas testing facilities at Sycamore Canyon, California; and the Atlas launching and test facilities at Cape Canaveral, Florida.

Iran Development Firm Created

A comprehensive economic development program for a 50,000-square mile section of Iran's Kerman Province has been undertaken by the newly created Kerman Development Corporation of New York, a firm jointly formed by Electric Bond and Share Company and Allen & Company, investment banking firms of New York.

Kerman Province, comparable in area to New York State, will be modernized by new development firm.

Studies will be made of the province's resources, and the economy will be improved through modernization of industry, agriculture, and commerce. Rich mineral resources of the area, including coal, iron, lead, copper, chromium, and bauxite, will be developed. Electric power, communication, and transportation facilities will be expanded.

The agreement between Iran's Plan Organization

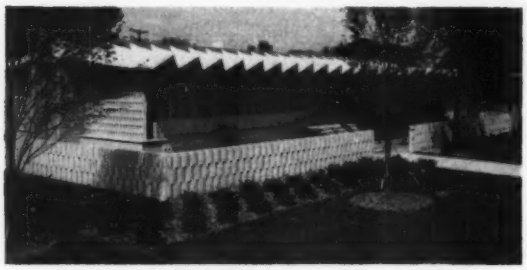
and Kerman Development Corporation calls for Ebasco Services Incorporated to do the engineering and provide necessary management of the long-range project. Supervision of construction will be done by Kerman Development Corp

New ACI Headquarters

The American Concrete Institute dedicated its new international headquarters building in Detroit last month. Design of the 36,000-sq ft structure incorporates the most up-to-date developments in concrete construction.

One feature of the building is its reversed-fold folded-plate reinforced concrete roof cantilevered from each corridor wall. Deep X-shaped beams form the roof tie across the corridor. Longitudinal ducts in precast concrete floor planks carry heated air in the winter or cooled air in the summer from the central supply ducts to outlets near the outside walls.

Ammann & Whitney, New York, was the structural engineer; Yamasaki, Leinweber & Associates, Birmingham, Michigan was the architect.



Modern ACI office building has folded-plate roof.

Dallas Fertilizer Plant

The Dallas engineering firm of Powell & Powell has drawn up plans for a $300,000 municipal plant to convert 40 percent of the city's sewage sludge into marketable fertilizer. Chicago, Houston, and Milwaukee now manufacture fertilizer from sewage.

Palo Alto Municipal Library

Design of the new 30,000-sq ft municipal library in Palo Alto, California includes glass perimeter walls and a ceiling of sound absorbing plastic light diffuser panels. Structural steel construction was used to carry the roof load to exterior pipe columns. The only interior columns in the building support the arches forming the gable over the main reading room. These arches were fabricated from 10-in. wide flange sections, weighing 33 pounds per foot.

Spanning out from the wide flange columns in the center of the building are 16-in. wide flange

rafter sections, weighing 36 pounds per foot. These are connected to 8-in. standard pipe columns. The wing of the library, serving as lounge, office, and work room areas, is supported by tapered steel beams on pipe columns giving a total span of 52 ft 10 in. A truss system of welded angles and structural tees links the reading room and the wing.

Structural engineers were Pregnoff and Matheu of San Francisco; Edward D. Stone, designer of the U.S. Pavilion at the Brussels Exposition, was the architect.

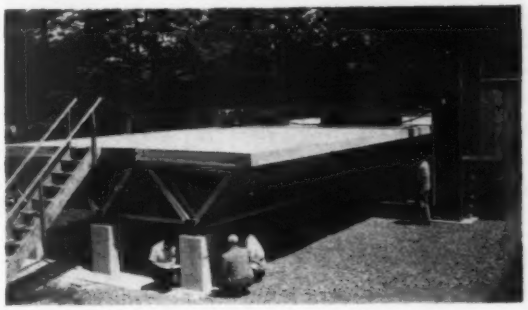
Hydroelectric Plants Recommended for Virginia

An engineering report prepared by Wiley & Wilson, consulting engineers of Lynchburg, Virginia, recommends a $114-million hydroelectric project to meet the long-range needs of a large section of Virginia. The proposed plan calls for construction of two dams on the Appomattox River above Petersburg. Financing would be through sale of 30-year revenue bonds, to be retired with profits from sale of water and electric power.

Stressed-Skin Aluminum Highway Span

Prototype of an aluminum highway bridge designed to aircraft stressed-skin or monocoque principles successfully completed load and endurance testing at Lehigh University. Designed and built by Fairchild Engine and Airplane Corporation, the new bridge offers advantages of low initial cost, particularly for spans greater than 80-ft long, and minimum maintenance.

The section tested consists of three 50-ft triangular beams of 0.081 gage rolled aluminum sheet,



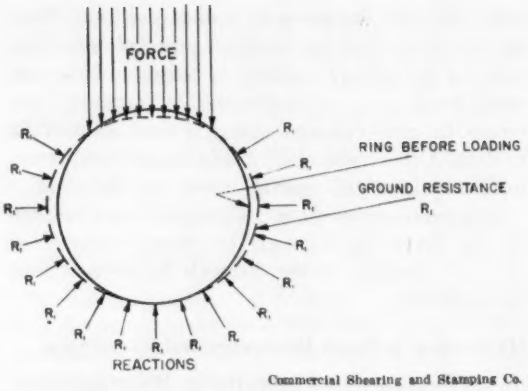
Special Swiss-built pulsating jacks were used to endurance test aluminum bridge section at Lehigh.

stiffened by aluminum extrusions riveted to one side of each sheet. Beams are bolted edge-to-edge at the top to form a 24-ft wide plate. A stiffened sheet of 0.125 gage aluminum is used as the bottom plate. A standard concrete roadway, joined to the

top plate by four rows of shear ties, becomes a composite structural member of the bridge.

The upper and lower plates and the concrete roadway carry bending loads. Vertical sides of the triangular beams form six canted webs which are the principal shear members. A transverse thermal beam at each end of the bridge compensates for differences in the rates of expansion of concrete and aluminum.

Comprehensive instrumentation recorded the behavior of the bridge during the test under both static and dynamic loading. Static tests included loads up to 150 percent of design moment. Endurance testing of more than one-million cycles at 150 percent of design moment represented over 100 years of normal service.



Commercial Shearing and Stamping Co.

Force diagram illustrates load and load reactions.

Liner Plates and Earth Tunnels

When an earth tunnel is supported by an assembly of liner plates, the ground in which the tunnel is driven provides both the load and the resistance to the load. The tunnel liner assembly simply serves as a means of transmitting and distributing the load imposed.

This is readily demonstrated by analyzing the forces involved. The principal load is vertically downward, and this tends to deflect a ring of liner plates into an elliptical cross section, with the top of the ring pushed toward the bottom and the sides bulging outward. However, horizontal movement is limited by the surrounding ground—a reaction called passive resistance. This abutting effect confines deflection to a small amount and forces the thrust line induced by the load to follow the tunnel liner ring.

The ability of each liner plate to perform satisfactorily thus depends on its cross-sectional area, which is a measure of its resistance to ring thrust, and the joint it makes with adjacent plates to trans-

mit this thrust. Section modulus—the measure of a liner plate's ability to withstand bending—is not significant in a well designed liner assembly.

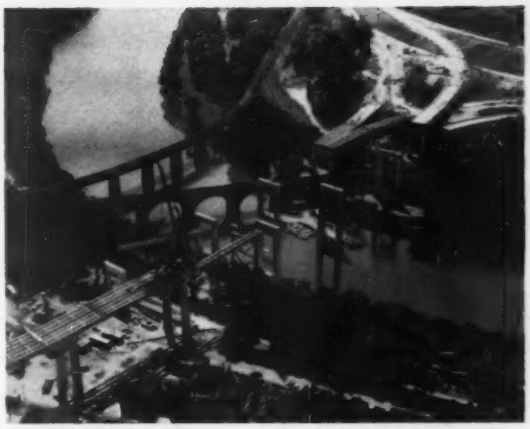
Twin Bridges for Philadelphia

Philadelphia's new Twin Bridges across the Schuylkill River, connecting the Schuylkill Expressway with the Roosevelt Boulevard Extension, are nearing completion. Erection crews recently placed six 130-ft long 35-ton steel girders in a four-hour period for the westbound bridge. Total steel required for the bridges, measuring a total of about 2000 feet, is 7215 tons. Richardson Gordon and Associates, Philadelphia consulting engineers, were designers.

Southdale's Electronic Security System

An electronic security system, developed by G. Rush Willet, head of G. R. Willet & Co., Chicago electrical consultant firm, aids the protection force at Southdale Shopping Center, Minneapolis, in their 24-hour surveillance of the 800,000-sq ft area.

A single guard stationed at the central control console can instantly detect fire or burglary in any of the center's 70 stores. He also operates all exit doors, lighting, a public address system, and the internal security communications serving the giant two-level building. Photoelectric cells are spotted strategically in the ceilings at 500 locations to sense

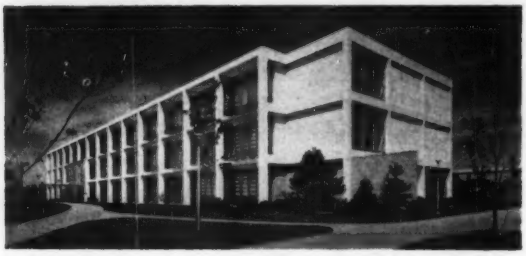


Aerial view of Philadelphia's Twin Bridges under construction. Spans pass over the railroad bridge.

unusual light levels; a flame 3 inches in diameter can be detected. Sensitive temperature indicators in 200 locations detect dangerous temperature rise and transmit simultaneous fire alarms to the control unit and the local fire department. This fire detection equipment was considered so reliable, no water sprinklers were installed. Southdale also is equipped with 500 talk-back loudspeakers which provide music during the day, but at night serve

as listening posts relaying the most minute sounds to the central office.

The network, first of its kind to be installed, operates on low voltage. Southdale also is wired for future use of closed-circuit television. Eventually, all shops, customers, and even the parking area may be continuously observed from the central protection office.



The City Hall is one of five units in Flint Center.

Flint Center Dedicated

The new $6.5 million municipal center in Flint, Michigan, designed by the Detroit architect-engineer firm of H. E. Beyster & Associates, Inc., includes a five-level, 100,000-sq ft City Hall, a Municipal Courts Building, a Police Facilities Building, a Public Health Building, and a dome-shaped Public Health Auditorium seating 250.

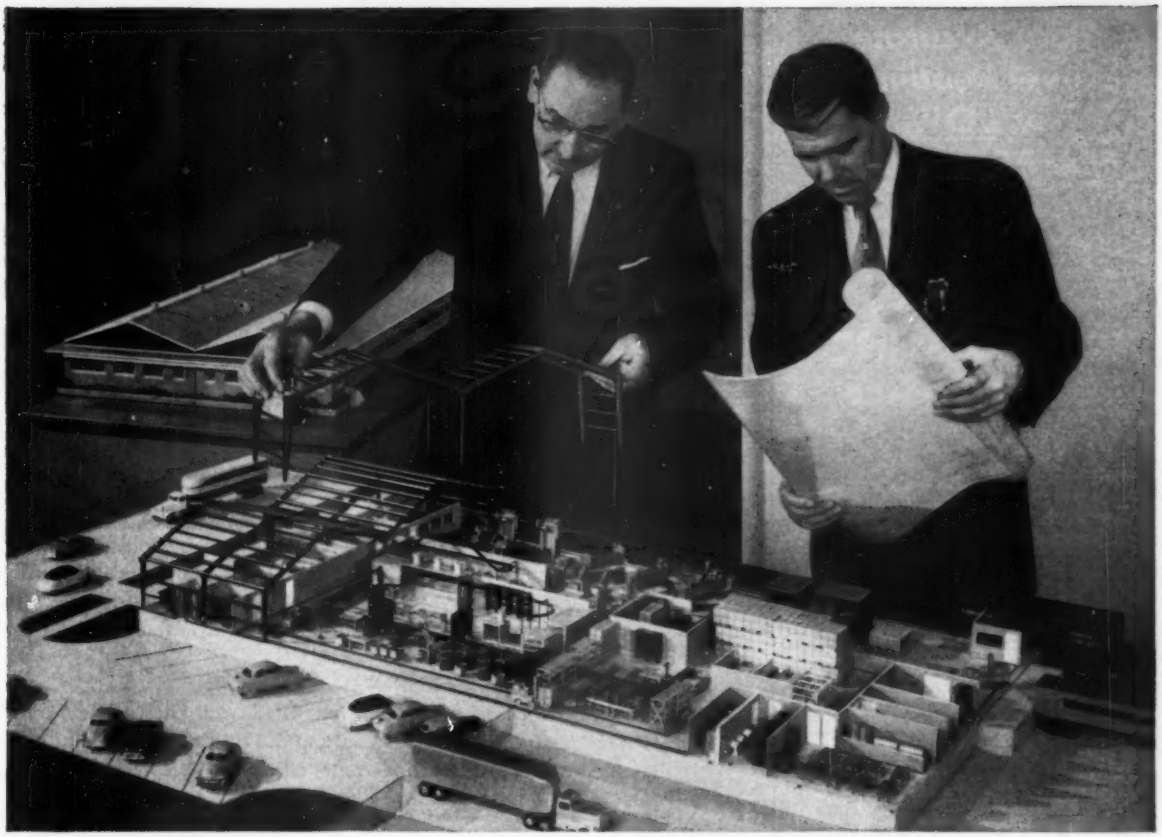
All buildings are of poured concrete construction with porcelain curtain walls. Elevators service each building and each has built-in vacuum cleaning systems. The City Hall is equipped with a pneumatic tube system to speed the exchange of money between offices.

St. Louis Engineers Club

Construction is under way on the $350,000 St. Louis Engineers Club, scheduled for completion in a year. The design of the 13,000-sq ft completely air conditioned structure included the collaboration of three consulting engineering firms.

Eason-Thompson Associates did the structural engineering; Ferris and Hamig designed the lighting and air conditioning systems; and Bolt Beranek & Newman were acoustical consultants.

The central feature of the structure is its 400-seat auditorium, with a complex system of lighting and equipment control permitting a slide talk speaker to change his own slides by remote control. Auditorium acoustical design, aided by a completely silent, separate air conditioning system, permits normal speech to be heard without artificial amplification at any point in the room. ▲▲



Why engineers are choosing pre-engineered Butler buildings

Engineers are discovering that precision-made, pre-engineered Butler buildings provide a completely standardized, yet flexible system of building. They have discovered that this system enables them to substantially reduce routine engineering time. Being freed from detail work, they have been able to concentrate on planning the over-all facility. Results—they have been able to provide more efficient facilities at lower cost . . . in far less time than traditional construction methods would permit.

The clear-span construction permits wide flexibility in laying out production, materials-storage and finished-stock areas. The truss-free, gable roof not only provides clear, overhead space for the installation of utilities and materials-handling systems, but also ventilates naturally. With the installation of Butler plastic, translucent Lite*Panls, engineers can take advantage of natural daylight for much of their lighting requirements. The weather-tight construction plus vapor-sealed insulation produces a building that is easy and economical to heat or cool, because there is less heat loss than in a traditional masonry building.

For further information on the Butler Building System and how it can help you build well . . . quickly and at low cost, a wide variety of industrial facilities, phone your Butler Builder. He's listed in the Yellow Pages of your phone book under "Buildings" or "Steel Buildings" or write direct.

Sweet's

BUTLER STEEL PRODUCTS

BUTLER MANUFACTURING COMPANY

7512 East 13th Street, Kansas City 26, Missouri

AISC

Manufacturers of Buildings • Oil Equipment • Farm Equipment • Dry Cleaners Equipment • Outdoor Advertising Equipment • Custom Fabrication

Sales offices in Los Angeles and Richmond, Calif. • Houston, Texas • Birmingham, Ala. • Atlanta, Ga. • Kansas City, Mo. • Minneapolis, Minn. • Chicago, Ill. Detroit, Mich. • Cleveland, Ohio • New York City and Syracuse, N.Y. • Washington, D.C. • Burlington, Ontario, Canada

Men in Engineering

The engineering offices of Robert P. Schoenijahn now are located at 800 Woodlawn Avenue, Wilmington 5, Dela.

Raymond H. Callahan, Abba G. Lichtenstein, and Herbert Storch have been named associates of the firm of Goodkind and O'Dea, consulting engineers of Hamden, Conn., Bloomfield, N. J., and New York, N. Y.

Malcolm G. Duncan has been named a project manager of A. M. Kinney Associates, Engineering and Architectural Consultants, of Cincinnati and New York City. Duncan formerly was a partner in the firm of Duncan and Chrisholm, Architects.

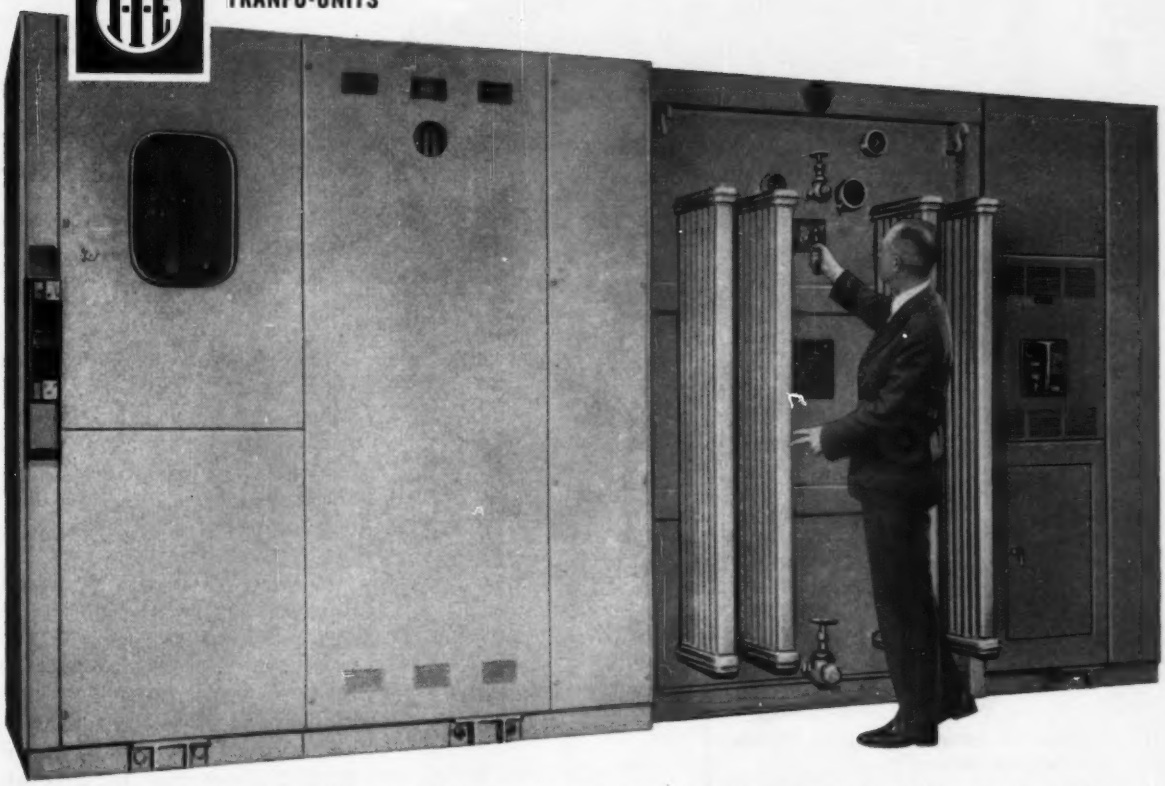
Frederick C. Tonetti has been appointed assistant director of research of Ebasco Services Incorporated. A member of the firm for the past 23 years, Tonetti has had experience in many fields, including system planning, integration of utility facilities, valuations, economic studies, forecasts, analyses, and reports.

Fred C. Meyer Associates, Consulting Engineers, have opened a new office at 440 Rochelle Ave., Rochelle Park, New Jersey.

Howard Weber has joined J. M. Little and Associates, industrial designers and consulting engineers, of Maumee, Ohio, as director of appearance design. Weber formerly was associated with Sundberg-Ferar, Inc., Detroit industrial design firm.

Milo S. Ketchum, senior partner in the structural engineering firm of Ketchum & Konkel, Denver, and recent member of the Institution of Structural Engineers, presented

TRANFO-UNITS



Neat, compact and completely self-contained—a practical, economical way to bring in your electric power at low cost higher voltage.

COMBINES DISCONNECT, TRANSFORMER AND SECONDARY CIRCUIT BREAKERS

More compact than a substation . . . better looking than combinations of loose equipment, yet no more costly . . . here is everything you need in many applications to buy power at economical high voltages.

Every I-T-E Tranfo-Unit is completely assembled and wired at the factory, and no live parts are exposed to contact by personnel. It is normally shipped as a single package. But heavier units are split for easier handling. There is no complicated assembly at the site. You simply position it, connect it, and it's ready for operation. There is nothing else to buy—no additional engineering required.

For supermarkets, schools, office buildings, factories and many other power uses, the I-T-E Tranfo-Unit means new safety, new ease of installation, new improved appearance for power entrance equipment. Available in ratings from 45 through 3000 kva, primaries through 14.4 kv, secondaries through 600 v. For literature, write I-T-E Circuit Breaker Company, Transformer & Rectifier Division, 19th & Hamilton Sts., Philadelphia 30, Pa. In Canada: Eastern Power Devices Ltd., Port Credit, Ont.

I-T-E CIRCUIT BREAKER COMPANY

PHILADELPHIA, PENNSYLVANIA

a paper on "The Status of Structural Engineering in the United States," before that society at its annual meeting in London last month.

John B. Howe, partner in the firm of Maurseth & Howe, Consulting Foundation Engineers, has been appointed by the American Arbitration Association to its National Panel of Arbitrators, serving in the Los Angeles area.

Architect John W. Scully has been made a partner in the firm of Johannessen & Girand, Architect-Engineers, of Phoenix, Ariz. Before joining Johannessen & Girand, Scully was associated with various architects in Phoenix.

J. Gibson Wilson, Jr., Structural Engineer, has moved his offices to 1426 N Street, Washington 5, D.C.

Honorary membership in the American Society of Mechanical Engineers has been given to John Blizard, director of research for the Foster Wheeler Corp.; Howard Coonley, professional engineer; James Gleason, chairman of the board of Gleason Works; and Ernest L. Robinson, former structural engineer for the General Electric Co. Honorary membership in ASME is conferred for "effective and faithful service rendered to the Society, to the engineering profession, or to the public." The four new honorary members will receive certificates at the Society's annual meeting in New York in December.

Robert A. Williamson has been promoted to chief structural engineer and Harold Soliday to chief electrical engineer of Holmes & Narver, Inc., engineers and constructors of Los Angeles. Both positions are new and follow a recent company reorganization that places operations on a division basis.

Charles W. Lovell has been made a partner in the firm of Johnson,

Top heating performance by RECO atop the mile high city!

FIRST NATIONAL BANK BUILDING Denver, Colo.*

Going up! This seven-ton RECO tank recently climbed 28 stories to a permanent spot on top of Denver's First National Bank Building. Now it is there to stay. This copper-lined hydropneumatic storage tank is typical of all RECO engineered products — including the copper-silicon generators, pressure tanks, and heaters which were installed at First National in less spectacular fashion.

RECO offers you a complete line of heat exchange equipment. All equipment is ASME inspected and insured. Special linings are available . . . all standard metals and alloys are used. Our engineers are at your service. Call or write for free 20-page storage heater catalog containing tables, dimensions, diagrams and details. *Address RECO, Dept. B, 7th & Hospital Sts., Richmond 5, Va.*

CONVERTORS STORAGE HEATERS INSTANTANEOUS HEATERS HEAT RECLAIMERS STORAGE TANKS

RICHMOND ENGINEERING CO., INC.

*Mechanical Engineers, Marshall & Johnson; Mechanical Contractors, Natkin & Company; Architects, Raymond Harry Ervin and Assoc.; Mead & Mount Construction Co.; RECO Representative, I. G. Downs Co., Denver

Depp & Quisenberry, Consulting Engineers of Owensboro, Kentucky. Lovell will maintain headquarters in Louisville at 418 Oread Road.

A new partnership, Loomis and Loomis, has been formed for the practice of professional engineering in structures and soils mechanics. Principals are Robert S. Loomis and Raymond H. Loomis. Offices are located at Savings & Loan Building, 252 Broad St., Box 322, Windsor, Connecticut.

In recognition for his achievements in the field of steam and gas turbine power plants and thermal power systems, J. Kenneth Salisbury, consulting engineer, Atherton, Calif., has been elected a Fellow of the American Society of Mechanical Engineers.

The consulting engineering firm of Clark, Daily and Dietz, with offices in Illinois and Tennessee, annouces the addition of Dr. W. D. Painter as a partner. Dr. Painter has been an associate of the firm since 1957, and will continue to manage the Memphis office.

The following men are associates in the firm: H. W. Byers, P. W. Clinebell, B. C. Conklin, D. R. Smith, M. Fuat Tigrak, Jamison Vawter, A. G. Cox, and D. J. Henry.

William A. Brown, Consulting Engineer, has moved to larger quarters in his own building at 1606 Twentieth St., N.W., Washington 9, D.C.

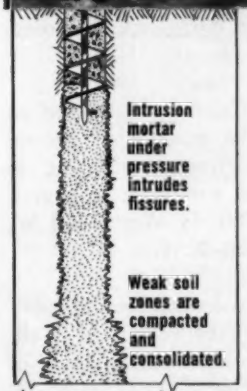
Guy B. Panero Engineers have moved their offices to 630 Third Avenue, New York 17, N.Y.

Abbott, Merkt & Company have moved their offices to 630 Third Avenue, New York 17, N.Y.

Rudolph F. Besier has been appointed chief engineer of Ketchum & Konkel, structural engineers of Denver. Besier will be responsible

I-P Cast-in-Place Piles aid . . .
SHOPPING CENTER BOOM

Pleasant Valley Shopping Center near Cleveland posed problems of uneven fill and irregular bedrock depths. Fill ranging from two feet to twelve feet discouraged use of spread footings for this basementless structure. Varying depth of underlying shale would have meant waste of time and material trimming driven piles to desired grade. Flexible I-P system allowed piles to be cast to specific conditions of 669 augered holes with consequent savings in time and money.



the merchandising marvel of the auto age finds firmer footing

Designers of new shopping centers are discovering how Intrusion-Prepakt Cast-in-Place concrete piles can simplify construction problems and reduce subsequent maintenance costs. I-P piling puts emphasis on quality, economy and prompt service, accomplished through the use of methods and materials unique in the entire industry.

I-P piles are placed by specially designed equipment ranging from heavy truck mounted rigs to demountable units for tight clearances. Piles may be cast to exact grade as opposed to wasteful cutting off tops of driven piles meeting refusal at irregular depths. Operations are flexible, quick and quiet, causing little or no disturbance in residential areas. Completely absent is the shock and vibration associated with driven piling.

Four separate types of Intrusion-Prepakt piling are custom-engineered to every soil and loading requirement. In stable soils, I-P's improved-design Cast-in-Place pile offers excellent footing at low cost. For unstable soils or where bedrock is excessively deep, unique Pakt-in-Place* piles give maximum skin friction and consolidation to surrounding areas. Where uplift or deflection are factors, post-tensioned Locked-in-Place* piles anchor any structure with unyielding tenacity. In gravelly soils, Mixed-in-Place* piles accept moderate loading at lowest cost.

An experienced I-P representative will recommend the best type of piling for your project without obligation. Contact Intrusion-Prepakt, Inc., 568Q Union Commerce Bldg., Cleveland 14, Ohio. In Canada, 159 Bay Street, Toronto, Ontario. European Division — Zurbaran 14, Madrid, Spain.

REMEMBER: the chances are you've been paying for the plus factors I-P piling offers. Why not make sure you get them!

*Trademarks of Intrusion-Prepakt, Incorporated

INTRUSION-PREPAKT, INC.

OFFICES IN PRINCIPAL U. S. AND FOREIGN CITIES

*Intrusion and Prepakt are trade marks of Intrusion-Prepakt, Inc., whose methods and materials are covered by U. S. Patents Nos. 2313110, 2655004, 2434302 and others, also patents pending.

for programming, scheduling, and supervision of all work of the firm.

Glenn B. Warren, vice president and consulting engineer of the Turbine division, General Electric Company, has been elected president of The American Society of Mechanical Engineers.

Elected to serve with Warren were five vice presidents. They are: Charles H. Coogan, Jr., University of Connecticut; Gordon R. Hahn, assistant chief mechanical engineer for Gibbs and Hill, New York; John W. Little, president of the Goslin-Birmingham Manufacturing Company, Alabama; Thomas J. Dolan, head of the Department of Theoretical and Applied Mechanics at the University of Illinois; and Harold Grasse, partner in Black and Veatch, Kansas City.

In addition, Arthur M. Perrin, president of National Conveyors Company, and Richard G. Folsom, president of Rensselaer Polytechnic Institute, were elected directors.

K. B. Wood & Associates, Inc., Photogrammetric Engineers, and Kendall B. Wood, Professional Engineers, have moved to new quarters at Room 601, Dekum Building, Portland 4, Oregon.

Francis E. Csendes has opened an office for the practice of general civil engineering, specializing in airports and waterfront structures, at Suite 1500, 11 West 42nd St., New York 36, N. Y.

Dr. E. T. Casler has been appointed executive consultant of Wellman-Lord Engineering, Inc., of Lakeland, Fla.

Richard H. Tatlow III, president of Abbott, Merkt & Company, New York architectural-engineering firm, is new president of the (New York) Metropolitan Section of ASCE.

The Metropolitan Section is the largest in the national organization, with a 1958 register listing of 3839 members. ▲▲

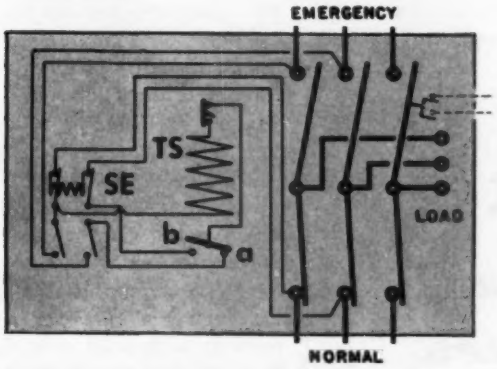
NUMBER 7 OF A SERIES

...WHY quiet operation and easy maintenance are imperative in an Automatic Transfer Switch design

- Transfer Switches often must be installed in control rooms, offices, showrooms or similar areas where A-C hum is objectionable. Furthermore, hum indicates vibration, and vibration lowers switch life.
- Easy inspection and maintenance saves your maintenance crew's time—saves you money. All parts should be accessible from the front of the panel — and provisions should be made for actual testing of the switch.

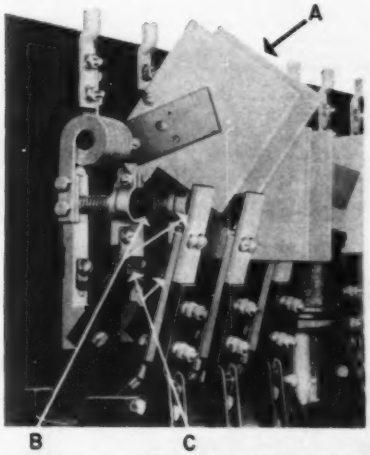
ASCO Automatic Transfer Switches are quiet in operation and easy to inspect and maintain

The single coil is only momentarily energized — only the low power loss supervisory relays remain continuously energized. Accordingly, hum and vibration stay at an absolute minimum.



ASCO momentary coil energization principle: On power failure upper contacts on relay "SE" open and lower contacts close. Main coil (TS) is momentarily energized from emergency source. Contact (a) immediately opens coil circuit. Normal power restoration again energizes "SE"; upper "SE" contacts close, momentarily energizing (TS) through contact (b). Switch returns load to normal, and (b) opens main coil circuit.

All parts are accessible from the front of the panel . . . switches are arranged to accommodate local or remote push button controls for periodic testing.



ASCO Transfer Switch with liftup type arc shield (A) simplifies adjustment and inspection routines. Arcing (B) and main (C) contacts are instantly accessible. Both are adjustable (at ratings of 125 amps and above); main contacts are silver surfaced for high contact quality.

Write for Catalog 57-S1 and for Publication 596 describing how to select Automatic Transfer Switches.

Automatic Switch Co.

50-cc Hanover Road, Florham Park, New Jersey • FRontier 7-4600

AUTOMATIC TRANSFER SWITCHES • SOLENOID VALVES • ELECTROMAGNETIC CONTROL

ASCO®

Books

For the Libraries of Consulting Engineers

THE SOLID STATE FOR ENGINEERS, by Maurice J. Sinnot; John Wiley & Sons, Inc., N.Y.; 522 pp.; $12.50.

Reviewed by
Gabriel Appleman
Director of Engineering
Foster D. Snell, Inc.

Engineers specify and use solid materials in their work on the basis of criteria developed—as a rule, empirically. Although fundamental theoretical development frequently precedes practical application, the reverse has long existed in those phases of metallurgical, mechanical, and structural engineering of most interest to the majority of consulting engineers. Within the lifetime of readers of this magazine, considerable study has been devoted to the development of basic concepts which might explain observed phenomena and lead to a greater understanding of the nature and application of solids, whether as materials of construction or in new applications.

This work is admittedly incomplete and much remains to be done before solid state physics can be universally and easily applied to the everyday problems of practicing engineers. However, some familiarity with solid state theory is useful to every engineer who deals with materials.

Until the publishing of this volume, an engineer wishing to familiarize himself with current thinking in solid state physics could only refer to a variety of advanced texts and papers, most of which are probably more intelligible to a research worker than the average consulting engineer. *The Solid State for Engineers* goes far to rectify this situation. Although a technical education is a prerequisite to the use of this book, it can be understood easily by the engineer who may be 10 or 20 years away

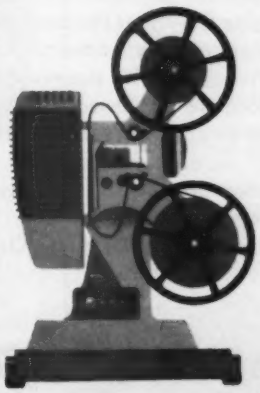
From Fort Ethan Allen, Vt. to Patrick Air Force Base, Fla.

Military installations join the trend to the modern pipe—"K&M" Asbestos-Cement Pressure Pipe with FLUID-TITE Coupling.

Steady, dependable water service—that's a major reason for the trend to "K&M" Asbestos-Cement Pressure Pipe. Once it's installed, you can forget about it. Year after year, the water keeps flowing through . . . clear and unimpeded by tuberculation, corrosion, or electrolysis. The combination of asbestos fibers and portland cement provides a rocklike durability.

K·M
BEST IN ASBESTOS

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA



For the complete story, be sure to see the new "K&M" film, "Lifelines of Your Community." It's the exciting, dramatic story of "K&M" Asbestos-Cement Pressure Pipe from the first step in manufacturing to actual installation. You'll learn how your community can enjoy the finest water service . . . uninterrupted . . . at lowest cost. How you can rid yourself of the headaches of costly, time-consuming repairs and replacement.

"Lifelines of Your Community" is now available for showing at council meetings, engineer or waterworks association meetings, or to other interested groups. All you have to do is write to us. We'll be glad to make arrangements for showing the film . . . and to give you complete information on "K&M" Asbestos-Cement Pressure Pipe.

from college mathematics, physics, and thermodynamics. Treatment of the subject matter in this book is clear and tempered by a keen appreciation of the special interests of engineers. Liberal use is made of illustrative examples to clarify difficult concepts. A bibliography appended to each chapter makes the book a useful starting point for a literature study on a specific phase of the subject matter.

The first nine chapters of the book deal with fundamental characteristics of solid matter: structure, crystallography, X-ray and electron diffraction, equilibrium, rate processes, metals, and ionic, covalent, and molecular solids. The remaining 21 chapters cover the various physical properties of solids: deformation, the theory of dislocations, polycrystalline solids, thermal properties, electron and zone theories, electrical conductivity, electronic and magnetic properties, dielectrics, optical properties, and surface phenomena.

To the consultant who frequently is called upon to deal with unusual applications and problems requiring a superior understanding of the nature of solid materials, *The Solid State for Engineers* can be extremely useful.

•

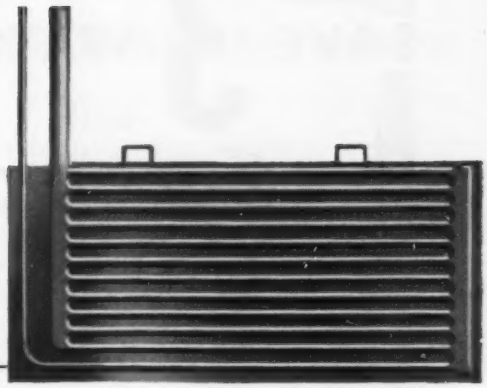
Five *Catalogs of Technical Reports* are now available from the Office of Technical Services, U. S. Department of Commerce. The catalogs list all research reports available from the OTS collection in the fields of zirconium, greases and lubricants, polystyrene, molded plastics, and anodic coatings.

Many of the reports listed are the result of research conducted for military and civilian agencies of the U. S. government. Others are German documents captured during World War II.

The catalogs may be ordered from OTS, U. S. Department of Commerce, Washington 25, D. C., at 10 cents each. They are: CTR-344, Zirconium; CTR-345, Greases

PLATECOIL®

The answer to your special heat transfer problems

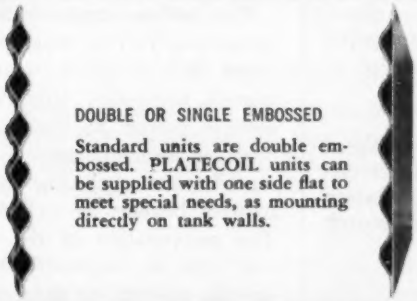


SAVES ON ENGINEERING, FABRICATING INSTALLATION, OPERATION AND MAINTENANCE COSTS

A Tranter PLATECOIL consists of two embossed metal sheets, seam and spotwelded together to form channels for the passage of heating or cooling media. Compact, lightweight PLATECOIL units are furnished in a wide range of standard sizes and styles. PLATECOIL saves space, requiring about half the space of a pipe coil of equivalent heat transfer area. Heat transfer is accomplished fully 50% faster by PLATECOIL as compared to pipe coils.

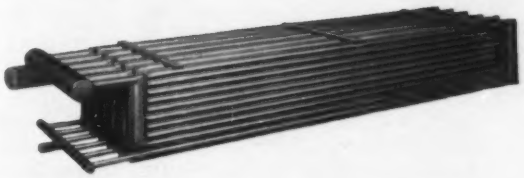
PLATECOIL Units are available in Cold Rolled Steel, Stainless Steel, Carpenter 20, Monel, and other corrosion-resistant alloys. In addition to the many sizes and styles available as standard PLATECOIL units, special units can be built on order to fit your specific requirements.

STANDARD OR SPECIAL FACTORY FABRICATED UNITS TO FIT YOUR NEEDS



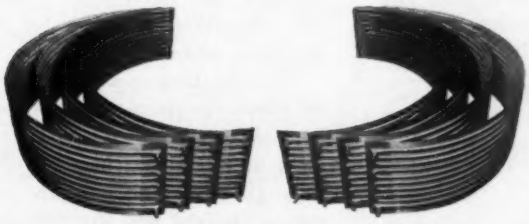
DOUBLE OR SINGLE EMBOSSED

Standard units are double embossed. PLATECOIL units can be supplied with one side flat to meet special needs, as mounting directly on tank walls.



BANKED

Factory-fabricated banks of PLATECOIL are available for specific applications in heating or cooling.



ROLLED

PLATECOIL Units may be rolled to a specified diameter in the direction of width or length, in either single embossed or standard units.

WITH SURFACE FINISHES

PLATECOIL can be galvanized, metallized, electropolished, polished for food service; prepared for plate finishes, lead and thermo-plastic coatings.

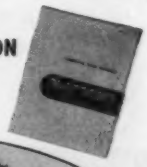
STRUCTURAL PARTS

PLATECOIL can be incorporated into heated or cooled conveyors, tank walls, baffles or partitions.

SPECIAL CONNECTIONS

Pipe connections can be supplied longer or shorter than standard, at right angles, in couplings, pipe nipples or elbows; in various positions.

COMPLETE APPLICATION INFORMATION
WRITE FOR FREE
TECHNICAL DATA MANUAL P85



Tranter Manufacturing Inc.

LANSING 9, MICHIGAN

PLATECOIL® DIVISION

and Lubricants; CTR-346, Polystyrene; CTR-347, Molded Plastics; and CTR-348, Anodic Coatings.

•

WATER RESOURCE DEVELOPMENT, by Otto Eckstein; Harvard University Press, Cambridge, Mass.; 281 pp.; $6.50.

Reviewed
by
Philip Abrams
James M. Montgomery,
Consulting Engineer

In the present discussions concerning public versus private development of the nation's natural resources, the important contribution given by this book is the detailed analysis of the methods used by the Federal government in evaluating the worth of a project relative to the economic welfare of the country. The consulting engineer will be interested specifically in the methods of evaluation based on benefits and costs of projects.

The author surveys benefit-cost procedures in four major fields of water resource development: flood control, navigation, irrigation, and electric power. In each of these fields an economic analysis is presented which evaluates direct and indirect benefits as well as costs. The computation of the benefit-cost ratio is accomplished for specific projects to determine the merit of the projects. A financial analysis of the project further establishes the repayment capacity and allocation of costs for the particular project.

The consulting engineer engaged by clients to prepare applications for loans from the Federal government under several of the public laws governing such loans may gain an insight into the complexities of the methods used by the several agencies for computing benefits, costs, and repayment capacities of projects in the field of water resources. Although a portion of the book considers the theoretical aspects of welfare economics and may be of interest only

Here's why it pays to Specify Silicone Insulated Transformers

A New Level of Performance for Power Station Auxiliaries

Insulated with silicones, dry-type transformers are so completely safe, you can locate them almost anywhere. Easier and less costly to install than liquid-filled types, they require no vaults, barriers or ventilating fans. And when installed, they offer the best assurance of uninterrupted power because Dow Corning Silicones mean extra overload capacity . . . superior resistance to high ambients, moisture and contaminated atmospheres. Here's how to select the dry-type transformer most suited to your needs —

for maximum reliability, minimum maintenance

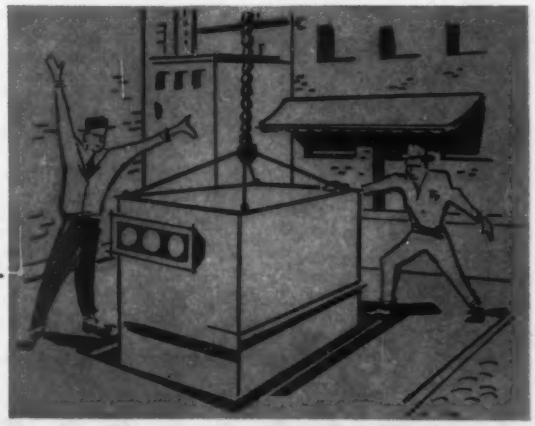
Specify a silicone-insulated *sealed* dry-type transformer. With core and coils sealed in an atmosphere of nitrogen, these units have no liquids to maintain . . . require only a periodic check of pressure gauge and bushings . . . are virtually maintenance-free.

for minimum weight

Specify a silicone-insulated *open* dry-type transformer. Lighter by 15% than the next lightest type, these units are ideal for balconies and other areas where minimum floor loading is a must.

A New Level of Performance for Underground Distribution Systems

Silicone-insulated, nitrogen-filled *network* transformers require so little upkeep, they can be buried and virtually forgotten. They are undamaged even when flooded. Only the bushings, pressure gauge and case require periodic inspection. Dry-type transformers fit easily into existing vaults; are completely safe even in case of extreme overloads or short circuits.



Send today for your copy of new brochure detailing how you can save with silicone insulated dry-type transformers. Includes up-to-date list of manufacturers offering equipment insulated with Dow Corning Silicones.

Address Dept. 1011

first in silicones

Dow Corning CORPORATION

MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS DETROIT LOS ANGELES NEW YORK WASHINGTON, D. C.

to the student of economics, the presentation of the thinking which accompanies the development of the benefit-cost ratio may be of direct value to the consultant. A complete bibliography covering the areas of discussion is included.

•

HOT LABORATORY EQUIPMENT, edited by Louis G. Stang, Jr., Brookhaven National Laboratory; U.S. Atomic Energy Commission; 429 pp.; $2.50.

This profusely illustrated handbook gives detailed descriptions and design information concerning facilities, equipment, and accessories used in the handling of radioactive materials. It is a revised and enlarged second edition of *The Hot Laboratory Catalog* published by the AEC in 1955.

Included are sections devoted to enclosures, viewing equipment, manipulators, machine tools for working radioactive materials, chemical processing equipment, materials handling equipment, monitoring and decontamination equipment, and shielding materials.

The book may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C.

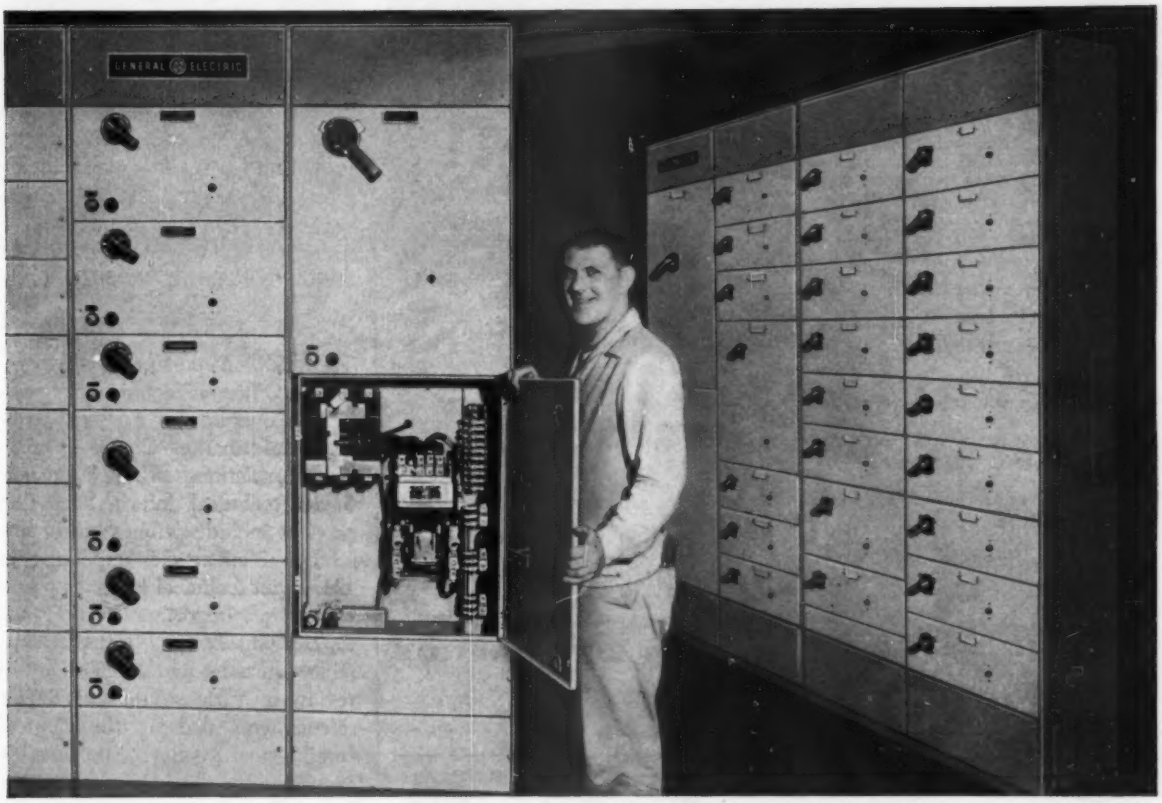
•

The American Welding Society has announced availability of Section II of the fourth edition of the Welding *Handbook — Gas, Arc, and Resistance Welding Processes.*

The book contains 13 chapters, each with a comprehensive bibliography and each with its own table of contents. Processes of a similar nature are grouped together and followed by a chapter describing the various types of equipment and accessories available.

Chapters are devoted to gas welding; pressure gas welding; shielded metal-arc welding; bare metal-arc welding; atomic-hydrogen welding; inert-gas metal-arc welding; submerged arc welding; spot, seam, and projection welding;

New idea offers more for the money...



New G-E Motor Control Center costs less, saves space, expands easily, needs less maintenance

General Electric's new Type DA7093 Motor Control Center controls and protects a-c motors, 200 hp, 110 to 600 volts. It is designed as one neat, compact package that saves up to 50% of floor space and takes the "cramp" out of installations where space is limited. (Each standard vertical section is 24" wide, 13½" deep and 90" high and will accommodate up to nine size 1 or six size 2 plug-in units.)

More than a space-saver, however, Type DA7093 boasts several advances of specific interest to consulting engineers and industrial users:

- **Costs less installed** than other control centers and less than individually mounted devices. Wiring is simpler and faster and the compact design of the "'93" can reduce required building floor area 20 to 25 square feet, saving $400 to $700 per installation when all items — lower construction costs, overhead, future taxes, insurance, etc.—are considered.
- **Flexible.** Standard plug-in control units in NEMA sizes 1 through 5 can be added, replaced or interchanged at any time in the field with minimum labor. Plug-in method cuts down-time and saves substantially in maintenance costs. Complete sections can be added quickly, easily.
- **Operates efficiently.** Bus bars are silver-plated for positive electrical contact. Standard ratings of main bus are 600 or 1200 amperes. Bus bars are mounted edgewise for optimum short-circuit strength of 25,000 or 50,000 amperes.
- **Pleasing appearance.** Clean, compact lines and two-tone color help give completed job a neat, professionally finished appearance.

For complete data, ask your G-E distributor or representative for bulletin GEA-6367A. Or write to **Distribution Assemblies Department, General Electric Co., Plainville, Conn.**

MOTOR CONTROL EXTRA VALUE

Split-type B terminal blocks permit quick, easy insertion or removal of control units. One-half of terminal block is secured to vertical section; the other half to unit frame. Lap-type terminal connections are disengaged simply by loosening captive screws. Unit can then be withdrawn without disturbing load or control wiring.

GENERAL ELECTRIC

and flash, upset, and percussion welding.

Each chapter has been written by acknowledged experts in the field. The entire welding industry has cooperated in the compilation of material for this book and information has been made available which previously was proprietary.

Copies may be obtained from the American Welding Society, 33 West 39th St., N.Y. 18, at $9.00 each.

•

The U.S. Department of Commerce, Office of Technical Services, now is operating a Foreign Technical Information Center to provide translations of much current Soviet technical information. The services include publication of abstracts of all articles appearing in 141 Soviet technical journals, translations of important sections of *Referativny Zhurnal* (Russia's abstract journal), and a semimonthly review of various areas of Soviet science compiled by the Central Intelligence Agency. Abstracts of each issue of the 141 journals may be purchased on a subscription or single-issue basis, as may CIA's *Scientific Information Report*. The complete list of Russian technical periodicals that will be abstracted is available from Foreign Technical Information Center, OTS, U.S. Dept. of Commerce, Wash. 25, D.C.

•

"Building For Professional Growth," National Society of Professional Engineers; sound, 16 mm, 20 min.

This motion picture is centered around scenes illustrating values and benefits of NSPE membership to the individual engineer and to the engineering profession as a whole. Starting at local chapter and state level meetings, the film moves to the national level to show the Society's national approach to professionalism in engineering.

Inquiries concerning reservations for the film should be addressed to

ARCHITECTS and ENGINEERS: Skidmore, Owings & Merrill
GENERAL CONTRACTORS: Chell and Anderson
HEATING and PROCESS PIPING: Wm. A. Pope Co.
AIR CONDITIONING and VENTILATION: Cicero Sheet Metal Co.

Efficient Manufacture Employee Well-being

both aided by Clarage "air" in new Avon cosmetics plant

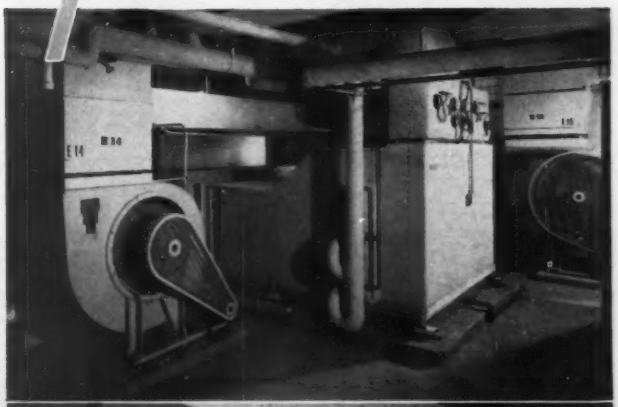
Here is much more than a thoroughly modern manufacturing facility. Here is a national sales center as well.

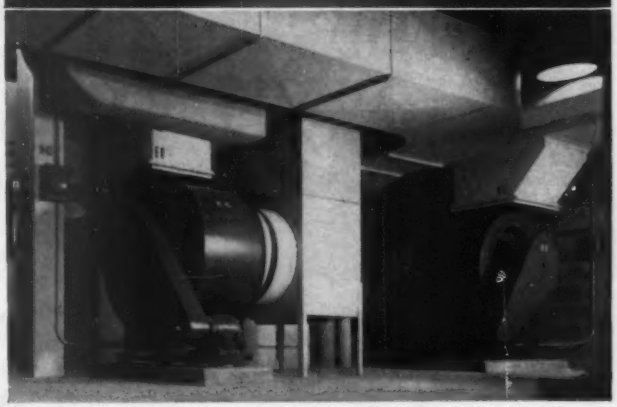
It's the new Avon Products, Inc., plant at Morton Grove, Illinois. From it flow the widely popular Avon cosmetic products. To it come members of Avon's door-to-door sales organization for training and sales meetings.

Air conditioning, thus, has a dual role to play in this structure — for employee comfort and for efficient manufacturing processes.

As for so many other noteworthy buildings, Clarage equipment was selected — some of which is shown on the right. On the job are Clarage Ready Unit ventilating sets, system fans, and Multitherm air conditioning units, including the famous Blow-Thru units pioneered and perfected by Clarage for multi-zone service.

You, too, will find it profitable to specify Clarage for your next assignments — no matter how large, how small. CLARAGE FAN COMPANY, Kalamazoo, Michigan.





CLARAGE ... *dependable equipment for making air your servant*

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

NSPE, 2029 K St., N.W., Washington, D.C. The rental fee is $10.

•

CONFERENCE ON WELDING ENGINEERING, PB 131739; U.S. Army Engineer Research and Development Laboratories; 469 pp.; $6.00.

This publication includes 35 technical papers delivered at the Conference on Welding Engineering, a joint government-industry meeting sponsored by the U.S. Army Research and Development Laboratories. The illustrated volume covers such subjects as welding for engineering fabrication, selection of welding processes, quality of workmanship, nondestructive testing procedures, and vibration and its control through use of welded steel.

Book is available from the Office of Technical Services, U.S. Department of Commerce, Wash. 25, D.C.

•

STANDARD PRACTICES FOR STATIONARY DIESEL AND GAS ENGINES, 5th Edition; Diesel Engine Manufacturers Association; 220 pp.; $5.00.

This newly revised and enlarged handbook is the work of an authoritative committee of engineers on diesel engine construction, selection, installation, performance, and operation. Illustrated with pictures, charts, and diagrams, the book consists of 20 chapters written not only to aid diesel and gas engine designers but for the consulting engineer as well.

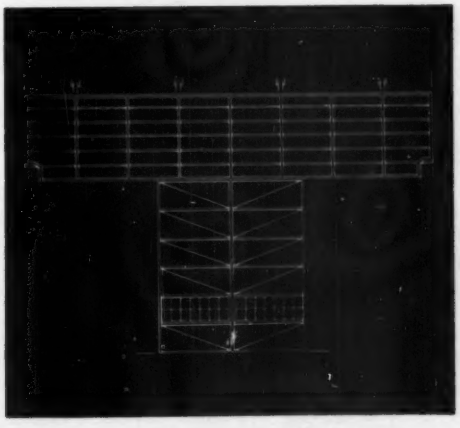
Copies of the book are available from the Diesel Engine Manufacturers Association, 2000 K St., N.W., Washington 6, D.C.

•

Technical papers presented by American delegates to the Second International Conference on Peaceful Uses of Atomic Energy, held in Geneva in September, now are available from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D.C.

A booklet listing the more than 600 papers is 25 cents. ▲▲

THIS BYRNE CRANE DOOR



The door illustrated is built with a one-piece, hinged-type upper section and swinging lower sections, all power-operated. Other Byrne Crane Door designs are available to meet any requirements.

seals the opening tight . . . takes less than one foot headroom

This Byrne Crane Door is used to seal tightly an opening 56 feet wide and 35 feet high. All door edges have heavy sponge rubber or bulb-type seals which provide a nearly air-tight closure in spite of the large door size. Less than one foot of headroom above the opening was required. Operation is smooth, and traditional Byrne quality guarantees long life and low operating costs.

The Byrne catalog contains many useful ideas which will help you with your large door problems. If you need additional help, Byrne engineers will be glad to assist you. Write for your copy of the newest Byrne catalog today.

BYRNE doors, inc.

1603 E. Nine Mile Road, Ferndale, Detroit 20, Michigan

101 Park Ave., New York 17, N.Y. • Cafritz Bldg., Washington, D.C.
Byrne Doors, Ltd., 381 College St., Toronto 2B, Ont.

MEMBER OF THE HANGAR AND INDUSTRIAL DOOR TECHNICAL COUNCIL

New Projects Reported

By Consulting Engineers

ARIZONA

Johannessen & Girand
Phoenix, Arizona
¶ Advance planning heavy duty runway, Phoenix, Ariz. (civil, struc., elec.) $7 million. Client, U.S. Navy.

ARKANSAS

E. M. Freeman and Associates
Shreveport, Louisiana
¶ St. Vincent's Infirmary, Unit 2, Little Rock, Ark. (civil) $1 million. Client, Swaim & Allen.

CALIFORNIA

John R. Anderson, Structural Engineer
Pasadena, California
¶ 12,250-sq ft warehouse addition, Williams Furnace Co., Norwalk, Calif. Tilt-up concrete walls, tapered steel roof girders, wood rafters, plywood roof sheathing. (struc.) $37,000. Client, Donald F. Shaw, General Contractor.
¶ Three 15,000-sq ft tilt-up concrete industrial buildings. (civil, struc.) $138,000. Client, Grand Central Industrial Center.

A. C. Martin and Associates
Los Angeles, California
¶ Shopping center on 90-acre site with central mall shopping including a 360,000-sq ft major department store, secondary department store, 300,000 square feet allotted for specialty shops, two markets, service shop, professional office building, and parking facilities for 6000 cars. Mission Valley, San Diego, Calif. (civil, struc., mech., elec.) $35 million. Client, May Department Stores.
¶ A 3300-man presentenced jail to be constructed on a selected site near Union Station, Los Angeles, Calif. (civil, struc., mech., elec.) $16.5 million. Client, County of Los Angeles.

COLORADO

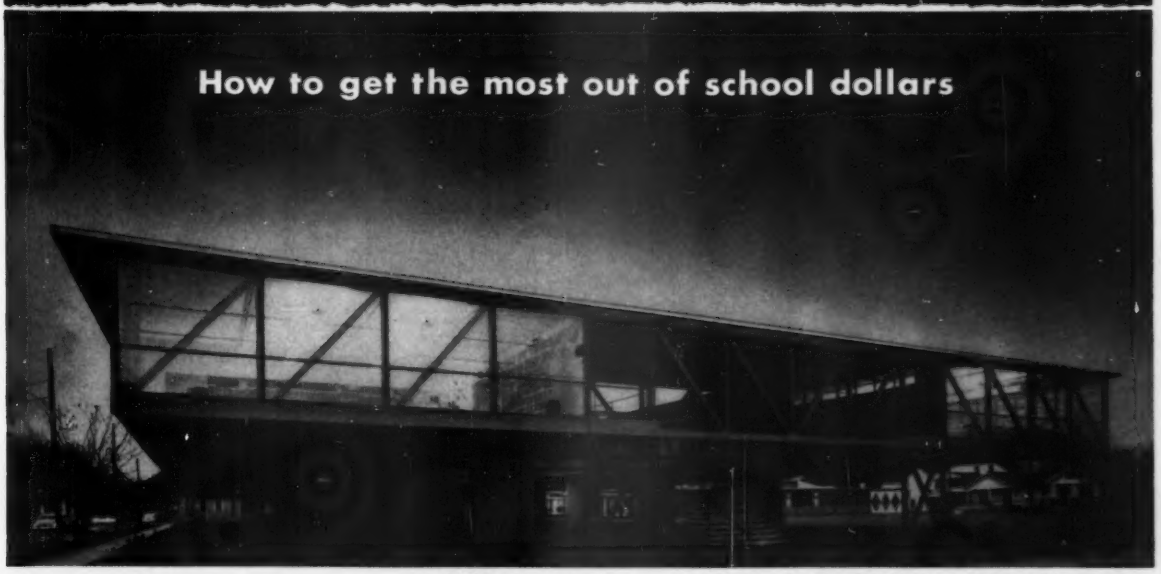
Miner and Miner, Consulting Engineers, Inc.
Greeley, Colorado
¶ Rehabilitation of 34 miles of 69-kv transmission line near Straton and Cheyenne Wells, Colo. (elec.) $130,000. Client, K. C. Electric Association, Hugo, Colo.

CONNECTICUT

Howard W. Harper
Southport, Connecticut
¶ St. Luke's Roman Catholic Church, Westport, Conn. (elec.) $150,000. Client, Lyons & Mather, Architects.
¶ New high school, Watertown, Conn. (elec.) $1.5 million. Client, Lyons & Mather, Architects.
¶ New high school, New London, Conn. (elec.) $2 million. Client,

Weldynamics

ARC WELDING AT WORK CUTTING COSTS



Phillis Wheatley Elementary School, New Orleans, Louisiana; B. M. Dornblatt & Assoc., Consulting Engineer; Charles R. Colbert, Architect; The Keller Construction Co., Contractor.

. . . unusual elevated design saves land welded construction cuts steel cost 15%

ARCHITECTS! ENGINEERS!

To help you apply the benefits of welded design to your projects the following aids are for your use: "Procedure Handbook of Arc Welding Design and Practice", over 400 pages devoted to design for structural arc welding—$3.00 postpaid in U.S.A. "Studies in Structural Arc Welding", sent free to architects and structural engineers. Write us for information.

The designers of this school were faced with the problem of providing more school facilities than the land area would normally contain. They solved the space problem by elevating the building to permit utilization of the area underneath for play and recreation.

Welded design used less material, cut material costs at least 15%.

The use of exposed structural work, another material saving technique, was made more desirable because of the smooth, clean appearance of welds.

Modern architects are turning to welded design to combine beauty and utility at lower cost.

The World's Largest Manufacturer of Arc Welding Equipment

THE LINCOLN ELECTRIC COMPANY, DEPT. 5811, CLEVELAND 17, OHIO

Lyons & Mather, Architects.
¶ Addition to Middlebrook school, Trumbull, Conn. (elec.) $50,000. Client, Lyons & Mather, Arch.
¶ Addition to library, Fairfield, Conn. (elec.) $125,000. Client, Lyons & Mather, Architects.

DISTRICT OF COLUMBIA

General Engineering Associates
Washington, D. C.
¶ Royal Danish embassy, Washington, D. C. (mech., elec.) $1 million. Client, Vilhelm Lauritzen.

Fortune Engineering Associates
Alexandria, Virginia
¶ Netherlands Carillon, Washington, D.C. (struc.) Client, Boks, Eijkelenboom & Middelhoek, Architects, Rotterdam.

FLORIDA

Shelby Sanders & Associates, Inc.
Pensacola, Florida
¶ Hydraulic fill, street paving, water and sewer lines, Pensacola, Fla. (civil) $500,000. Client, Santa Rosa Island Authority.

ILLINOIS

Basil G. Egon
Chicago, Illinois
¶ Shoreline Towers apartments, Chicago, Ill. (mech., elec.) $5 million. Client, Irving Karlin, Arch.
¶ Oakton bowling plaza, Skokie, Ill. (mech., elec.) $500,000. Client, Morton Z. Levine, Architect.
¶ Garden View convalescent home, Chicago, Ill. (mech., elec.) $250,000. Client, Shayman & Salk, Arch.

R. J. Abramson & J. M. Klipp
Chicago, Illinois
¶ Burnham Park Yacht Club, Chicago, Ill. (mech., elec.) $12,000. Client, Burnham Park Yacht Club.
¶ Green Acres Country Club, Northbrook, Ill. (mech., elec.) $40,000. Client, Green Acres Country Club.
¶ The Valley Shopping Center, St. Charles, Ill. (civil, mech., elec.) $300,000. Client, Sidney H. Morris & Associates.
¶ Eagle United Food Stores, Chicago, Ill. (mech., elec.) $80,000. Client, Sidney H. Morris & Assoc.

INDIANA

Oral C. Craft & Associates
Gary, Indiana
¶ Lake County Home, Lake County, Ind. (elec.) $2 million. Client, Beine, Hall & Curran, Architects.

R. J. Abramson & J. M. Klipp
Chicago, Illinois
¶ Tri City Shopping Center, Gary, Ind. (civil, mech., elec.) $800,000. Client, Sidney H. Morris & Assoc.

KENTUCKY

Clyde P. Mason, Consulting Engineer
Lexington, Kentucky
¶ Winn-Dixie Super Market. (civil, struc., mech., elec.) $100,000. Client, Realty Farm Development.

LOUISIANA

E. M. Freeman and Associates
Shreveport, Louisiana
¶ Emergency paving, Barksdale Air Force Base, La. (civil) $700,000. Client, Corps of Engineers, U.S. Army, Little Rock District.
¶ Paving, Barksdale Air Force Base. (civil) $3 million. Client, Corps of Engineers, U.S. Army, Little Rock District.
¶ Texas Line-Greenwood interstate highway. (civil) $3.6 million. Client, Louisiana State Department of Highways.
¶ Additions to North Louisiana Sanitarium, Shreveport. (civil) $500,000. Client, Wiener-Morgan-O'Neal.
¶ Shreve Island commercial center, Shreveport. (civil) $750,000. Client, Wiener-Morgan-O'Neal.

MARYLAND

Fortune Engineering Associates
Alexandria, Virginia
¶ Ravenwood Super Giant Store, Maryland. (struc.) Client, Jos. Saunders & Associates.

MINNESOTA

Pfeifer and Shultz
Minneapolis, Minnesota
¶ Construction of seaway port at Duluth, Minn., including bulkhead, dredging, warehousing, transit sheds, gantry cranes, roadways,

JENN-AIR HI-D BELT DRIVEN CENTRIFUGAL AND AXIAL POWER ROOF EXHAUSTER

Hi-D MEANS HIGH DISCHARGE and LOWER ROOF MAINTENANCE

HI-D CENTRIFUGAL POWER ROOF EXHAUSTER
Unit in open position, showing ready access to drive assembly.

HI-D AXIAL POWER ROOF EXHAUSTER
Unit in open position, showing ready access to drive assembly.

New JENN-AIR aluminum belt-driven units meet industry's need for exhausters that combine high discharge with low contour appearance.

Often times it is advantageous to avoid direct discharge of air onto a built-up roof. Hi-D with no increase in curb height averages double the discharge height of ordinary fans. It likewise offers advantages in areas where drifted snows require higher discharge height. Ordinarily this would mean the use of higher curbs and unsightly projection above the roof line. Once you compare, you will decide on Jenn-Air.

JENN-AIR PRODUCTS COMPANY, INC.
1102 Stadium Drive, Indianapolis 7, Indiana

and railroads. (civil, struc., mech., elec.) $10 million. Client, Seaway Port Authority of Duluth, Minn.

MONTANA

Phillips-Carter-Osborn, Inc.
Denver, Colorado
¶ Water treatment plant and supply line. (civil) $1.25 million. Client, City of Helena, Mont.

NEBRASKA

Raymond H. Reed & Company
Columbus, Nebraska
¶ 26 miles of 34.5 kv transmission line and two 34.5/12.5/7.2 kw substations. (elec.) $240,000. Client, Butler County Rural Public Power District, David City, Nebr.

NEW JERSEY

Andre H. Vanderzanden
River Edge, New Jersey
¶ Office for toy factory, 3500 sq ft, one-story, reinforced concrete foundations, structural steel and timber frame. Exterior walls, aluminum and glass window wall and brick, fully air conditioned. (struc., mech., elec.) $50,000. Client, Colorforms, Norwood, N.J.

NEW MEXICO

Bridgers and Paxton
Albuquerque, New Mexico
¶ Indian hospital, Gallup, N.M. (mech.) $4 million. Client, Flatow, Moore, Bryan & Fairburn, Arch.
¶ Library, Brigham Young University. (mech.) $4 million. Client, Lorenzo Young, Architect.
¶ Office addition, ACF Industries, Albuquerque, N.M. (mech.) $900,000. Client, Louis Hesselden, Architect.
¶ Military construction, Albuquerque, N.M. District, Corps of Engineers. (mech.) Several millions. Client, Various architects.

NEW YORK

Weinberger, Frieman, Leichtman & Quinn
New York, New York
¶ Four 20-story buildings and one 21-story building, New York City Housing Project, Bronx, N. Y. (struc.) $16 million. Client, Joseph & Vladeck, Arch.
¶ Two 20-story apartment buildings spanning over East River Drive, New York City. (struc.) $12 million. Client, Paul Resnick & Harry Greene, Arch.
¶ New York City Police Academy. (struc.) $10 million. Client, Kelly & Gruzen, Arch.
¶ Six apartment buildings in 19- to 21-story class. (struc.) Client, various architects.
¶ City and municipal courthouse, New York City. (struc.) $16 million. Client, M. W. Del Gaudio and William Lescaze, Arch.

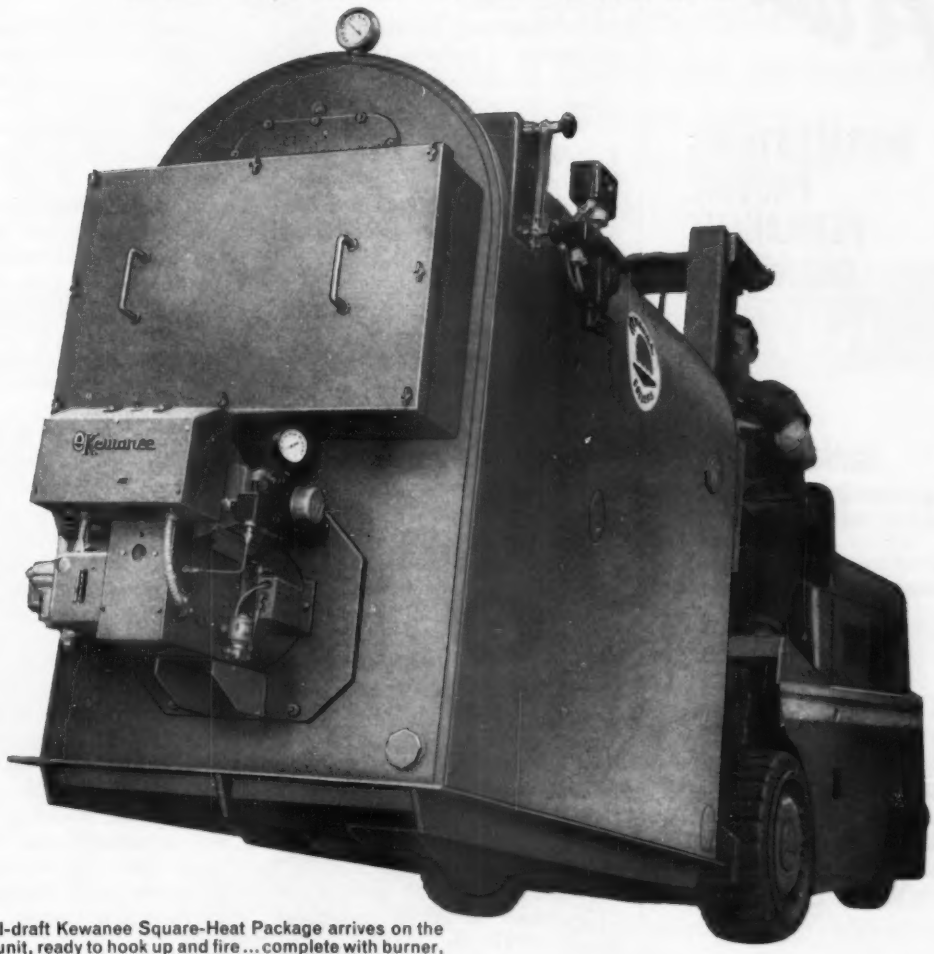
Gennaro Mianulli
Brooklyn, New York
¶ Convent and novitiate for the Sisters of the Sick-Poor, Rockville Center, L.I. (struc.) $1 million. Client, Joseph Mathieu, Architect.
¶ Cunard building alterations, new elevators, New York City. (struc.) $150,000. Client, John J. Foley, Consulting Engineer.

James N. De Serio, P.E.
Buffalo, New York
¶ Office building, Buffalo, N. Y. $550,000. Client, Earl Martin, Arch.
¶ School building, Ellicottville, N. Y. $1.1 million. Client, Earl Martin, Arch.
¶ 8-story hospital building, Buffalo, N. Y. $2.8 million. Client, James, Meadows & Howard, Arch.
¶ Public school 91, Buffalo, N. Y. $3 million. Client, James, Meadows & Howard, Arch.
¶ Church and parish hall, Buffalo, N. Y. $220,000. Client, James, Meadows & Howard, Arch.
¶ Deaconess hospital, boiler house addition, Buffalo, N. Y. $200,000. Client, James, Meadows & Howard, Arch.
¶ Store building, Buffalo, N. Y. $50,000. Client, H. L. Peters, Inc.

OHIO

Harold B. Husted, P.E.
Youngstown, Ohio
¶ Saxon recreation center, Salem, Ohio. (struc.) $60,000. Client, Bergemann & Smith, Architects.
¶ Roadways, parking area, bus unloading area, and area drainage for new Salem High School, Salem,

NOW . . . FORCED-DRAFT FIREBOX PACKAGES



Forced-draft Kewanee Square-Heat Package arrives on the job as a unit, ready to hook up and fire ... complete with burner, pre-wired control panel, pre-cast refractory chamber and skids. It requires no crating...no job-site insulating.

KEWANEE® SQUARE-HEAT GAS-OIL UNITS

for 15 lb. steam or 30 lb. water, 216,000 to 1,800,000 Btuh

For the first time, Kewanee offers a fire-box package boiler! The new Square-Heat Packages are forced-draft, requiring only a stub vent—no high stack. Kewanee's new combination gas-oil burner fires natural, mixed or L.P. gas . . . No. 1 or 2 fuel oil. One switch changes fuels . . . automatic changeover is available. An exclusive air distribution system pre-mixes gas and air before it enters the combustion chamber, for smoother and more efficient firing.

Along with the new burner is a new pressure-tight front flue cover dogged down by easily removed wing nuts . . . and a new, standard-equipment, wrap-around insulated jacket of heavy-gauge steel. Retained in the new units are Square-Heat's compact design, large firebox, widely spaced 3" fire tubes, large disengaging area and ample steam space.

For complete facts see your Kewanee Man or write: AMERICAN-STANDARD*, KEWANEE BOILER DIVISION, 109 Franklin Street, Kewanee, Illinois.

See this new Square-Heat unit among the display of Kewanee forced-draft packages at Booth 134, Power Show, New York Coliseum, December 1-5, 1958.

*American-Standard and Standard ® are trademarks of American Radiator & Standard Sanitary Corporation.

AMERICAN-Standard
KEWANEE BOILER DIVISION

Ohio. (civil) $40,000. Client, Salem Board of Education.

Jay J. Seaver Engineers
Chicago, Illinois
¶ Ore unloading, bedding, storing, reclaiming at Jackson, Ohio. (civil, struc., mech., elec.) $500,000. Client, Jackson Iron & Steel Co.

R. J. Abramson & J. M. Klipp
Chicago, Illinois
¶ Shoreway Shopping Center, Sheffield Lake Village, Ohio. (civil, mech., elec.) $170,000. Client, Sidney H. Morris & Associates.

Finkbeiner, Pettis & Strout
Toledo, Ohio
¶ Preliminary survey, water treatment plant and transmission mains. (civil) $1 million (est.). Client, City of Oregon, Ohio.
¶ Preliminary survey, water system improvements. (civil) $300,000 (est). Client, City of Maumee.
¶ Plans and specifications, new waterworks intake and low service station. (civil) $250,000. Client, City of Port Clinton, Ohio.
¶ Plans and specifications, sanitary sewer system in South Sewer District #5. (civil) $425,000. Client, Village of Perrysburg, Ohio.
¶ New water works intake in Lake Erie. (civil) $250,000. Client, City of Port Clinton, Ohio.

H. M. Morse & Company
Cleveland, Ohio
¶ Cleveland paint manufacturing plant, 122x181-ft. (struc., mech., elec.) $250,000.

Tozzer & Associates
Marion, Ohio
¶ Bridge on county road 66 over Little Scioto River. (civil, struc.) $91,000 (est.) Client, County of Marion, Ohio

George M. Neuffer
Dayton, Ohio
¶ Remodel stairway, remove mezzanine floor, repair bearing walls, fireproof floors in office building, Dayton, Ohio. (civil, struc.) $30,000. Client, Owner.
¶ Remodel office, Dayton, Ohio, 2-story structural steel, underpin footings, reinforce roof supports, remove existing trusses, replace with structural steel. (civil, struc.) $60,000. Client, Owner.

PENNSYLVANIA

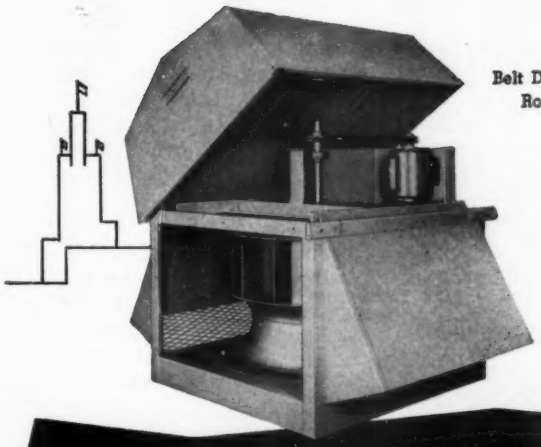
Roushey, Smith & Uhlmann
Kingston, Pennsylvania
¶ Flood-control project for Pennsylvania Bureau of Mines and Mineral Industries covering installation of deep well pumps to prevent flooding of anthracite mining operations; includes four 4000 gpm, 800 hp pumps and related facilities. (civil, struc., mech., elec.) $1 million. Client, Glen Aldon Corp.
¶ District office building for Metropolitan Life Insurance Company. (civil, struc., mech., elec.) $90,000. Client, Pool Realty Company.

Sauter & Castor, A. W. Lookup Co.
Philadelphia, Pennsylvania
¶ 8-story reinforced concrete library for University of Pennsylvania, Philadelphia. (struc.) $4.5 million. Client, Harbeson, Hough, Livingston & Larson.
¶ Four 8-story dormitories and two 6-story dormitories of reinforced concrete and dining hall of reinforced concrete and structural steel for 2000 students at Pennsylvania State university. (struc.) $14 million. Client, Harbeson, Hough, Livingston & Larson.
¶ Telephone building of concrete and structural steel for Pennsylvania State university. (struc.) $150,000. Client, Harbeson, Hough, Livingston & Larson.

Turnpike Engineers, Inc.
Philadelphia, Pennsylvania
¶ Bypass, Pottstown, Pa., limited access, 4-lane highway, 10 miles. $12 million. Client, Pennsylvania Department of Highways.

Metzger-Moy, Associated Consulting Engineers
Huntingdon Valley, Pennsylvania
¶ Huntingdon Valley Presbyterian church and Sunday school additions. (plumbing, elec.) $160,000. Client, J. E. Drucken Miller, Arch.

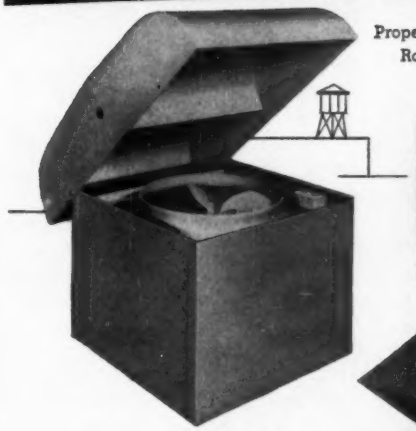
Ebert and Park
Pittsburgh, Pennsylvania
¶ Western Pennsylvania state school and hospital, Morganza, Pa. Five major buildings and boiler



Belt Drive Centrifugal
Roof Ventilator

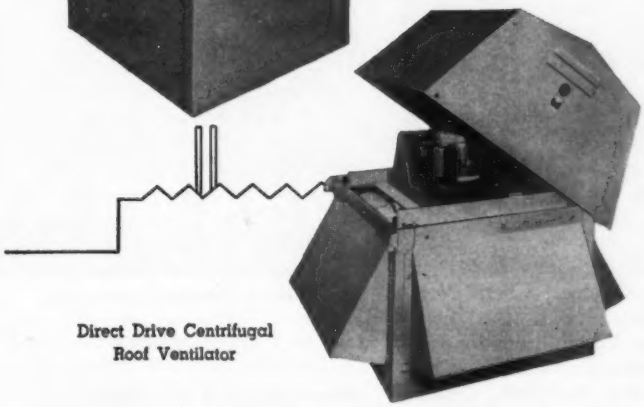
Recommended for their high quality, ease of installation, low maintenance cost, trouble-free operation, space-saving features, and blower-like performance.

Peerless Electric Roof Ventilators . . .



Propeller-Type Power
Roof Ventilator

Peerless Electric Roof Ventilators offer engineers, architects, contractors and users AMCA rated units that embody sturdiness, high performance ratings, and low noise levels. They are particularly suited for public buildings, industrial plants, hospitals, churches, schools, and other similar applications.



Direct Drive Centrifugal
Roof Ventilator

Sizes range from 12" to 60" wheels; 640 to 45,000 c.f.m., depending upon the unit selected. Peerless Electric Roof Ventilators are built of 16 gage steel, or heavier, to last the life of the building. They fit all standard curb sizes. Matching wheel cones accurately fit venturi inlet for quieter operation . . . smoother air movement.

Write for Complete Line Catalogs

A COMPLETE LINE OF AIR MOVING EQUIPMENT

Member of the Air Moving and Conditioning Association, Inc. (AMCA)

Peerless Electric

FAN AND BLOWER DIVISION
THE Peerless Electric® COMPANY
1449 W. MARKET ST. • WARREN, OHIO
FANS • BLOWERS • ELECTRIC MOTORS

SEE OUR CATALOG IN SWEET'S

house. (mech.) $9.2 million. Client, Celli-Flynn, Arch.

¶ New general hospital, Lock Haven, Pa. (mech.) $2 million. Client, B. Kenneth Johnstone, Arch.

¶ Vincentian Home for Chronically Ill, Allegheny County, Pa. (mech.) $1.5 million. Client, B. J. Marlier, Arch.

¶ Divine Providence Preparatory school, Allison Park, Pa. (mech.) $1.2 million. Client, Celli-Flynn, Architect.

Franklin & Lindsey
Philadelphia, Pennsylvania

¶ Development of 275 homes, 4 miles of streets, including storm sewers, sanitary sewers, water, and gas. West Goshen township, Chester county, Pa. (civil) $800,000. Client, Joseph Lupowitz Sons, Incorporated.

Gustav Stueber P.E.
Pittsburgh, Pennsylvania

¶ 6-family apartment building, steel frame, masonry type construction. (struc.) $60,000. Client, W. Bennix, Owner.

¶ Parochial school building for St. Sebastian's Roman Catholic church, Belle Vernan, Pa. (civil, struc.) $225,000. Client, H. E. Clark, Arch.

¶ St. Johns Ukranian Catholic church, McKeesport, Pa. (struc.) $150,000. Client, H. E. Clark, Arch.

H. G. Metzger, Jr. & Associates
Huntingdon Valley, Pennsylvania

¶ North Hills Country club, survey and report on all mechanical services for all buildings and structures. (mech., elec.) Client, North Hills Country club.

¶ Sunday school additions for Holy Trinity Lutheran church, Lansdale, Pa. (mech.) $300,000. Client, Charles M. Talley, Arch.

Edward A. Moy
Woodbury, New Jersey

¶ Store and district headquarters, F. W. Woolworth Co., Philadelphia, Pa. (elec.) Client, Paul Hesser, Arch.

Eugene L. Aufiero, P.E.
Harrisburg, Pennsylvania

¶ One-story elementary school; ten rooms plus multipurpose area and offices. Holy Family School, Harrisburg, Pa. (struc.) $250,000. Client, Starr and Long, Arch.

¶ Ten-room elementary school, steel frame with steel joist-supported roof. (struc.) $250,000. Client, Starr and Long, Arch.

Ellis E. Bankson & Son
Pittsburgh, Pennsylvania

¶ Sewage treatment plant for Borough of Elizabeth, Allegheny County, Pa. (civil, struc., mech., elec.) $684,000. Client, Elizabeth Borough Municipal Authority.

Buchart Engineering Company
York, Pennsylvania

¶ Prepare design, specifications, and structural plans for Easton area joint high school, Easton, Pa. Steel structure. (struc.) $2,168,000. Client, Buchart Assoc.

¶ Prepare design, specifications, and structural plans for Conemaugh High School, Somerset County, Pa. Steel structure. (struc.) $543,150. Client, Buchart Associates.

¶ Prepare design, specifications, and structural plans for Holsoppie Tire Hill elementary school, York County, Pa. Steel structure. (struc.) $494,160. Client, Buchart Associates.

¶ Prepare design, specifications, and structural plans for Spring Grove High School, Spring Grove, Pa. Steel structure. (struc.) $497,000. Client, Buchart Associates.

¶ Prepare design, specifications, and structural plans for Southern Elementary School, York County, Pa. Steel structure. (struc.) $315,150. Client, Buchart Associates.

TENNESSEE

Albert Switzer & Associates
Jackson, Mississippi

¶ Natural gas transmission line and distribution system. (civil) $9 million. Client, Middle Tennessee Natural Gas Utility District, Smithville, Tenn.

¶ Natural gas transmission line and distribution system. (civil) $1,080,000. Client, Humphreys County Utility District, Tenn.

¶ Natural gas transmission line and distribution system. (civil) $1.6 million. Client, Jefferson-Cocke County Utility District (Cities of

UNIQUE IN OPERATING ADVANTAGES

new high pressure closure for Ross feedwater heaters

Open for your inspection, during tube welding, this is the business end of a Ross Feedwater Heater. Take an inside look at the most unique High Pressure Closure in the business. It's brand new.

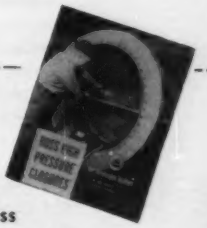
Only four major parts complete the assembly and she's ready to perk . . . pass partition cover, channel cover, two flange rings. That's all *you'll* need to handle at maintenance time. *Simple* is the word!

. . . so is *ruggedness.* The exceptionally high safety factor built into the load carrying cover and channel is more than double ASME Code requirements. Construction prevents overload of main engagements when tightening studs. Differential expansions between channel and cover do not effect channel wall, while bearing surfaces are spaced identically for uniform load. Temperature stresses from start-ups or load changes are virtually non-existent. There's more . . . much more!

AMERICAN-Standard
ROSS HEAT EXCHANGER DIVISION

NEW BULLETIN

You'll have to see the detailed design features of this new Ross development to fully appreciate the tremendous advantages. They are illustrated and described in new Bulletin 201.1K1. Mail coupon for your copy.



AMERICAN-STANDARD
ROSS HEAT EXCHANGER DIVISION
BUFFALO 5, N. Y.

Please send your new Bulletin 201.1K1 describing high pressure closures for Ross Feedwater Heaters.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

CE-1158

Newport, Dandridge, Jefferson City, and White Pine, Tenn.)

TEXAS

The Marvin Turner Engineers
Austin, Texas
¶ 14,000-ft of 54-in. steel water line. (civil) $900,000. Client, City of Austin, Texas.
¶ 12,000-ft 12-in. pipe from Rundberg Lane and interregional highway to St. Johns Ave. and East Crest Drive. $72,000. Client, City of Austin, Texas.
¶ Enlargement of present sewage disposal plant to add 50 percent of existing capacity. $800,000. Client, City of Austin, Texas.
¶ Swimming pool in East District Park. $100,000. Client, City of Austin, Texas.

SERVICES FOR CONSULTING ENGINEERS

VIRGINIA

General Engineering Associates
Washington, D. C.
¶ 100-unit air conditioned elevator apartment building, Arlington, Va. (mech., elec.) $1 million. Client, Corning & Moore.

Fortune Engineering Associates
Alexandria, Virginia
¶ 102-unit motel, restaurant, and swimming pool. Two supported floors and pile foundations, Alexandria, Va. (struc.) $685,000. Client, Jos. Saunders & Associates.

WASHINGTON

The Fluor Corporation, Ltd.
Los Angeles, California
¶ Engineer and construct product tankage, truck and barge facilities, yard piping, utilities, and an office-shop building for a proposed 15,000 barrels per day refinery at Vancouver, Wash. $2 million. Client, Pacific Supply Cooperative, Incorporated.

WEST VIRGINIA

J. Stephen Watkins, Consulting Engineers
Lexington, Kentucky
¶ Location, surveys, design, and construction plans for approximately 14 miles of interstate highway from Big Sandy (W. Va.-Ky. state line) running south of Huntington toward Charleston. (civil, struc.) $27 million. Client, West Virginia State Road Commission.

WISCONSIN

Alvord, Burdick & Howson
Chicago, Illinois
¶ Detailed plans and specifications for intercepting sewer and sewage-disposal plant to be built over a 5-year period. Intercepting sewers up to 135-in. diameter; treatment plant will be separate sludge digestion type, capacity 100 mgd with disinfection of effluent and disposal through submerged outfall in Lake Michigan. $54 million. Client, Milwaukee Sewerage Com.
¶ 6-mgd addition to water filtration plant in Sheboygan, Wisconsin. $910,901.

The Port of Portland's extreme reliability requirements are met by S&C's Fused Interrupter Metalclad Switchgear with S&C Automatic Transfer Panel and Moto-Draulic Operators

Nation's newest jet-age terminal gets modern S&C Metalclad Switchgear

8-Bay assembly of S&C Metalclad Switchgear contoured to fit location at Portland International Airport.

Consultant on high-voltage electrical equipment: George A. Drewett, area engineer for Pacific Power & Light Co.

Extreme reliability of electrical services is a major requirement of the modern jet-age airport, because of the great number of vital radar and lighting needs.

Pacific Power & Light's staff studies showed that this high degree of reliability suggested the use of fused interrupters metal-enclosed, with an integral automatic transfer panel controlling operators for preferred-to-emergency switching.

Result: Modern S&C Metalclad Switchgear was specified.

The power circuits of this modern new airport are run in conduits or protected cable trays, and so are free from transient faults. The proper protection against the only type of fault which is likely to occur—a permanent fault—is the Power Fuse as employed in S&C Switchgear.

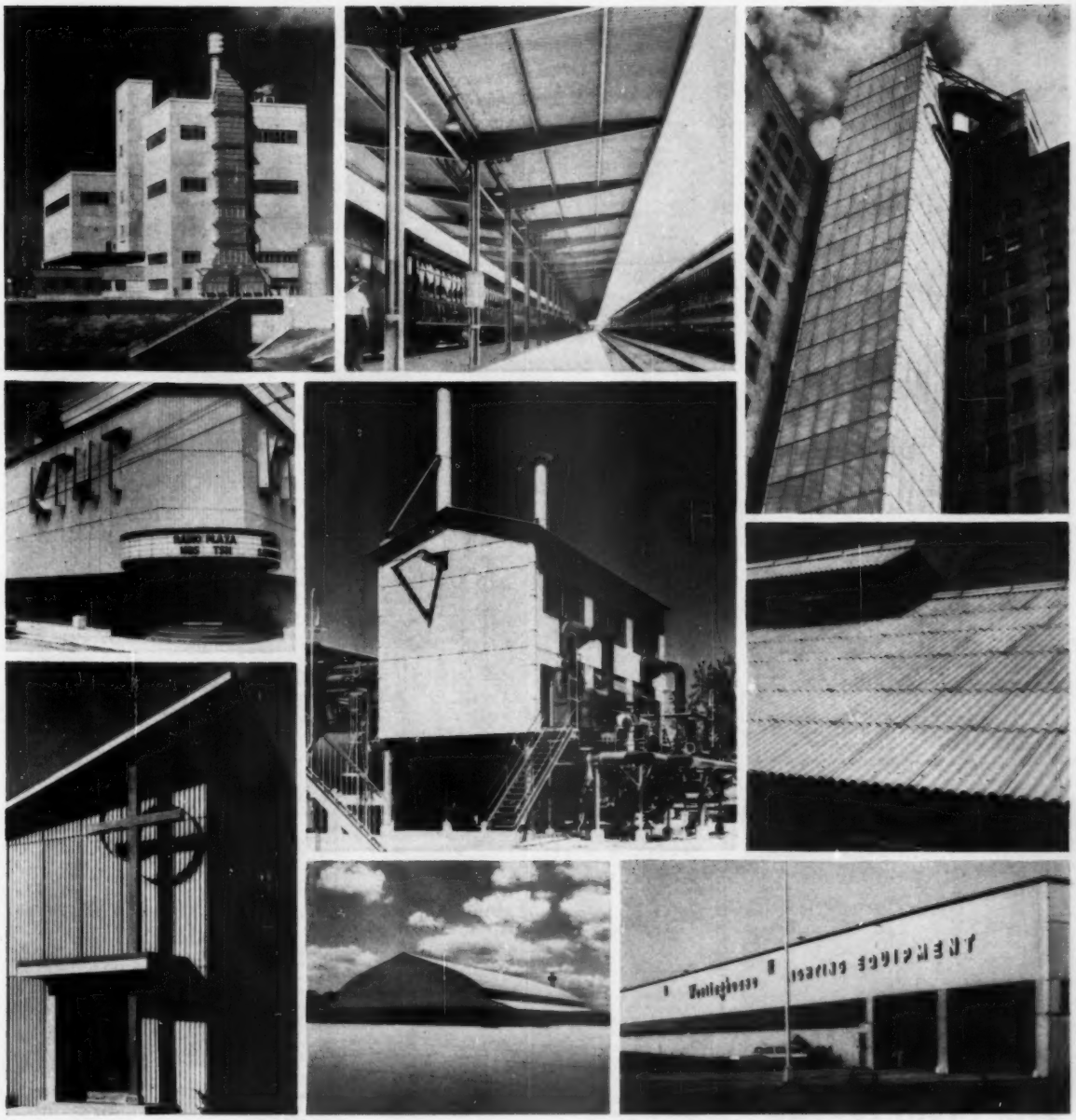
To maintain continuity of service, the installation uses S&C Load Interrupters actuated by a Moto-Draulic Operator which is controlled in turn by an S&C Automatic Transfer Panel. This modern equipment meets new, modern standards of reliability, and at the same time saves as much as 50% in capital outlay for switchgear.

For information, write S&C Electric Company, 4436 Ravenswood Ave., Chicago 40, Ill. In Canada: S&C Electric Canada, Ltd., 8 Vansco Road, Toronto 14, Ontario.

Specialists in High-Voltage Circuit Interruption for Utilities Since 1910

S&C

METALCLAD SWITCHGEAR



Completely versatile... Corrugated ASBESTONE "400"

Power plants, oil refineries, airplane hangars, factories, railroad stations, cooling towers...Gold Bond Corrugated ASBESTONE "400" even goes on churches. Millions of feet have been used for siding and roofing on all types of industrial and commercial buildings. ASBESTONE "400" resists the harmful effects of weather, salt air, moisture, fumes, rot...and it can't burn! It goes up fast—requires little or no maintenance. Always specify Gold Bond® Corrugated ASBESTONE "400" for the best buildings.

For more detailed information on Corrugated ASBESTONE "400" send for our new Technical Manual, A.I.A. File 12-F. Write Dept. CE-118, National Gypsum Company, Buffalo 2, New York.

Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY

ADVERTISERS' INDEX

For a safe, practical roof deck

Gold Bond Poured Gypsum Roof Decks are safe: they won't burn or transmit high temperatures when exposed to flame. This assures the lowest possible fire insurance rates.

Poured gypsum roof decks go up fast—up to 20,000 square feet a day. Fast initial set allows other trades to follow deck contractor within a few hours.

There's a wide variety of insulating, acoustical, weather- and fire-resistant formboards available for every type of job.

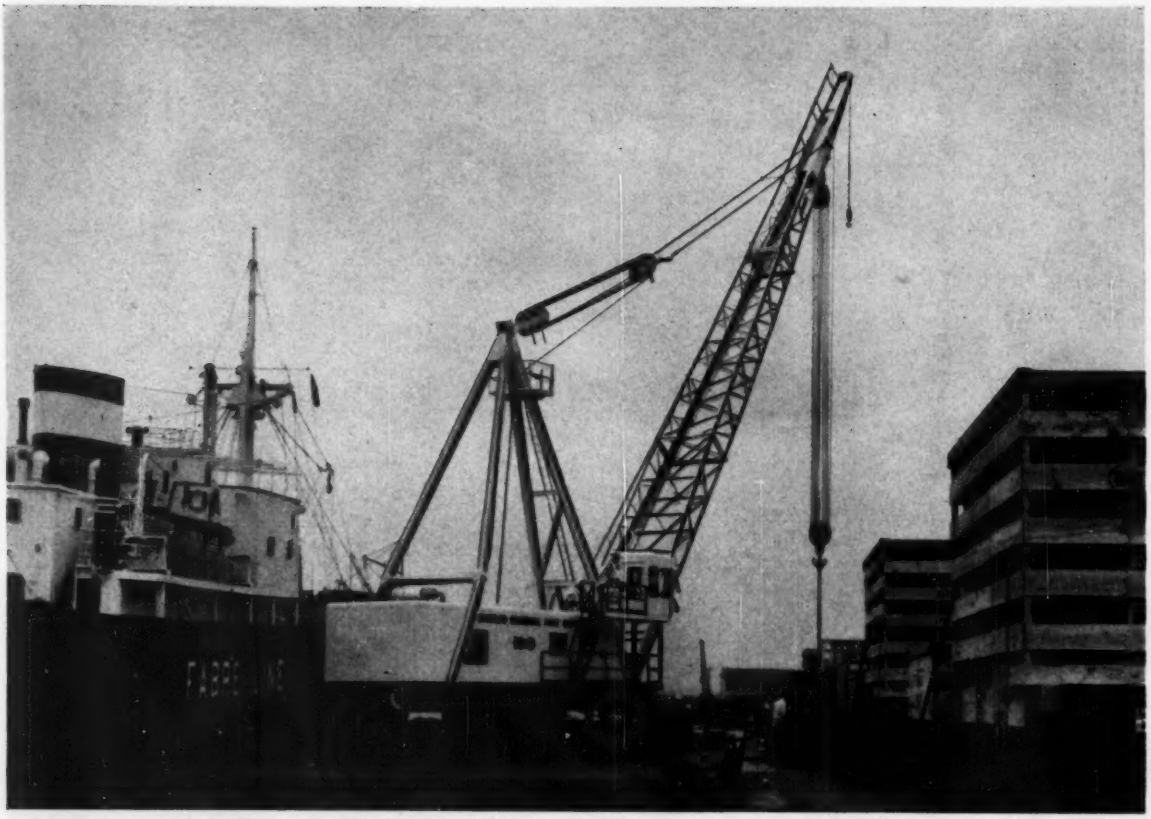
FOR YOUR CONVENIENCE: To help you design the most economical steel framing and the right combination of Gold Bond® materials for the job, send for free sub-purlin selector today. Use coupon at right:

Gold Bond
BUILDING PRODUCTS

NATIONAL GYPSUM COMPANY

FREE SUB-PURLIN SELECTOR
Dept. CE-118, National Gypsum Company, Buffalo 2, N.Y.
Gentlemen: Please send me your free sub-purlin selector.

Name _____
Firm _____
Street _____
City _____ State _____



Great Lakes' Largest . . .

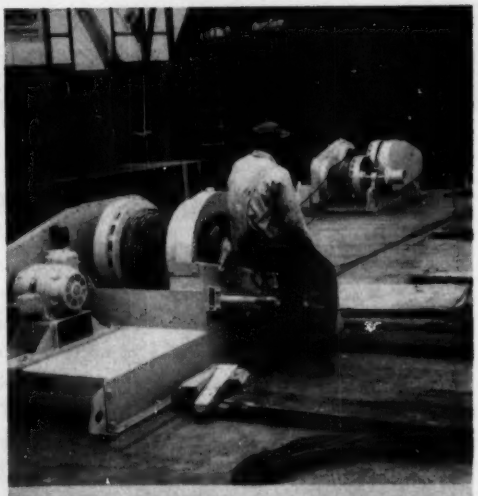
Clyde Whirley Handles 110 Ton Lifts For Chicago Regional Port District

Now boasting the most powerful crane on the Great Lakes, the newly developed Lake Calumet Harbor is well equipped to handle the heaviest cargoes shipped via the Great Lakes waterway.

Installed recently by the Chicago Regional Port District, this Whirley, another addition to Clyde's imposing list of port installations, has a load capacity of 110 tons at a 45 foot radius and 38 tons at 125 foot radius. The Whirley has a full-revolving 110 foot boom with 20 foot extension and is barge mounted to service the entire harbor. Two Clyde deck winches shift the barge along the dock or vessel as operations require.

Clyde Whirleys have long been acknowledged as cargo-handling workhorses of the world's leading ports. Operating with buckets, hooks or magnets, Whirleys have an unequalled reputation for reducing costly tie-up time for vessels and for fast, dependable, low-cost handling of any type cargo.

Write or phone our Marine Engineering Division for complete specifications on Clyde Whirleys, custom-engineered to best serve your particular needs.



Two Clyde electric hoists give the Chicago Regional Port District's Whirley 'run of the harbor'. Barge mounting saves dock space, always at a premium in busy ports.

CLYDE RIC REPUBLIC INDUSTRIAL CORPORATION

CLYDE IRON WORKS, Inc.

Established 1898

DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : UNLOADERS
BUILDERS TOWERS : CAR PULLERS : ROLLERS

WORLD'S LONGEST SUSPENSION BRIDGE

Better Control of Lightweight Concrete Workability and Shrinkage with POZZOLITH*

Mackinac Bridge, Michigan

Owner: Mackinac Bridge Authority

Consulting Engineer: Dr. D. B. Steinman

Associate Consultant: Glenn B. Woodruff

Substructure Contractor: Merritt-Chapman & Scott Corp.

Superstructure Contractor: American Bridge Div. U. S. Steel Corp.

POZZOLITH Ready-Mixed Concrete: Louis Garavaglia Co.

***Below:* Determining Workability with Kelly Ball — observing penetration into fresh concrete.**

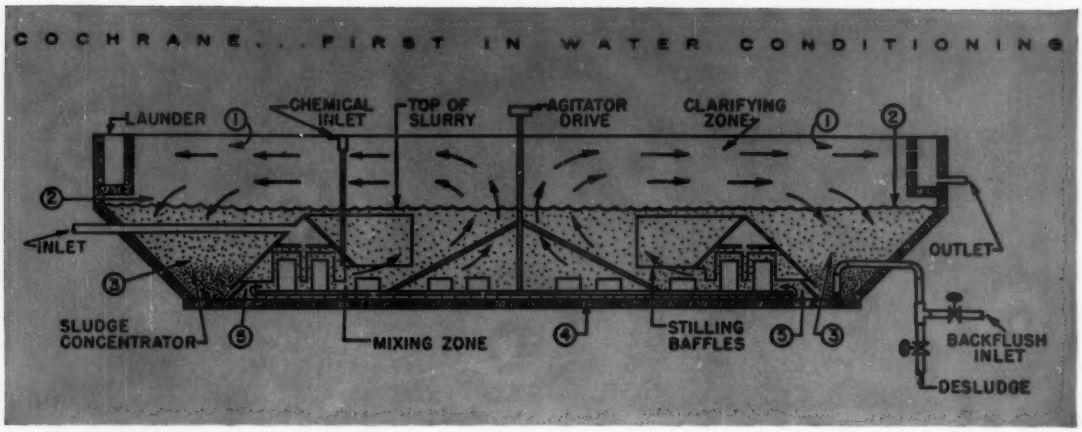
Workable, lightweight concrete, with 2½"-3" slump...
Good cohesiveness and reduced shrinkage...
Strength: 4250 psi average at 28 days — 3000 psi specified...
... these are several of the benefits obtained with POZZOLITH in the lightweight concrete filled floor sections of this $100-million structure.

One of our fieldmen will be glad to demonstrate — at your desk or on the job — the important advantages of POZZOLITH for your projects.

***POZZOLITH — Master Builders trademark for its time-tested water-reducing, air-entraining admixture for concrete.**

THE MASTER BUILDERS CO.
DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • *Export:* New York 17, N. Y.
Branch Offices In All Principal Cities • *Cable: Mastmethod, N. Y.*



A **Cochrane** solids contact reactor is designed to provide the ultimate in clarification

Cochrane suspended solids contact coagulating and softening clarifiers are packaged units that combine a mixing zone at the bottom with a clarifying zone above.

A bottom agitator in the mixing zone keeps old precipitates in constant suspension. Thorough mixing and contact between the old and new precipitates is thus assured. This results in a more complete reaction with a minimum in chemical requirements and retention time. In the clarifying zone the water is effectively separated from the slurry precipitates and clarified.

The Cochrane reactor design is unique in its baffle and agitator arrangement, as follows:

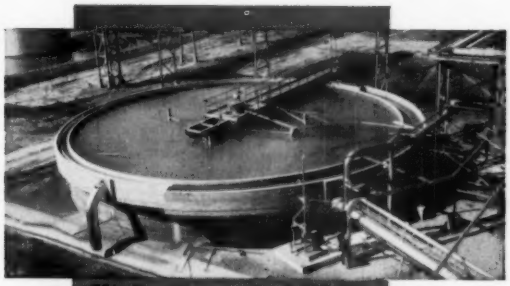
① Radial *Horizontal* Flow—*Not Upflow*. Velocity decreases from center to launder. Slurry particles separate more efficiently from horizontal flow than from upflow.

② Slurry flow is *downflow* in clarifying zone below collecting launders—*not upflow*—thus preventing carryover of turbidity into effluent.

③ Sludge settles only in annular *concentrator* outside of mixing zone. Maximum concentration results because no turbulence is present. This feature saves wastage of water in desludging.

④ There is no premature loss of slurry strength in mixing zone because no sludge settles on the floor of mixing zone.

⑤ Turbulence in mixing zone assures excellent mixing. A large, full-diameter agitator causes centrifugal outward flow, against the diverting baffle in front of the outer port and turns flow inwardly towards central port.



72' diameter, capacity 9,000,000 GPD located in Georgia.

72' diameter, capacity 9,000,000 GPD located in Texas.

Two units [illegible] diameter—capacity 20,000,000 GPD located in Wash[illegible]

Cochrane

CORPORATION

3112 N. 17TH STREET, PHILADELPHIA 32, PENNA.

NEW YORK • PHILADELPHIA • CHICAGO

Cochrane Water Conditioning Ltd., Toronto 4, Montreal 1, Winnipeg 1, Canada.

Representatives in Thirty Principal Cities in U.S., San Juan, Puerto Rico; Honolulu, Hawaii; also: Paris, France; La Spezia, Italy; Mexico City, Mexico; Havana, Cuba; Caracas, Venezuela; San Diego, Chile; Manila, Philippine Islands.

Pottstown Metal Products Div.—Custom built carbon steel and alloy products

Demineralizers • Hot Process Softeners • Hot Zeolite Softeners • Dealkalizers • Reactors • Deaerators • Continuous Blowoff Systems

Condensate Return Systems • Specialties

Part 2 November 1958

Consulting Engineer

Keep This Directory in Your
Technical Reference File

A DIRECTORY OF ADVERTISERS' LITERATURE

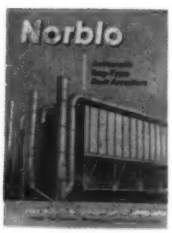
AIR CLEANING AND DUST COLLECTION

1—Electric Precipitators

Five fundamental engineering factors governing the success of precipitator installations are fully described and illustrated in a 22-page booklet, "Buell SF Electric Precipitators." Factors include positive gas flow control, uniform electrode emission, rapping method, mechanical construction.
Buell Engineering Company.

2—Paper Air Filter

Bulletin B-1300-2 describes the design and construction of Far-Air HP filter, which is a deep pleated, flame proof, disposable filter completely preformed. Filter weighs approximately 1 lb. and is highly efficient in the small, 0 to 5 micron, size particle range. Available in three standard sizes, all 8" deep.
Farr Company.



3—Bag-Type Dust Collectors

How the Norblo automatic bag-type dust collector can provide continuous operation at full capacity is explained in four-page folder 164-5. Dimensions and capacities are listed in tabular form. A flow diagram explains how the unit works. Each part of the collector is shown separately with its description.
The Northern Blower Company.

4—Installed Cleaning Systems

The Spencer Turbine Company's catalog 160 describes and illustrates installed vacuum cleaning systems for schools, offices, hospitals, hotels, restaurants, clubs, civic and municipal buildings. Included is a description of the various uses of the system and what satisfied users think of it. Spencer representatives listed.
The Spencer Turbine Company.

5—Dust Control Systems

Catalog MM-4001 outlines outstanding features of new Chem-Jet dust control systems for all phases of materials handling in metal and nonmetallic mines. Photographs show typical applications. Also describes new Type A Hydro-Precipitator for control of gases with dust smaller than 5 microns in size.
Johnson-March Corporation.

6—Dust Collectors

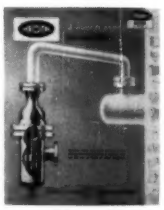
Bulletin describes cabinet cloth filter dust collectors and their advantages. Contains illustrations of actual installations together with multiple rating tables, complete specifications, and floor space requirements. Also included are dimensional drawings of the product. Bulletin is printed in 2 colors.
Torit Manufacturing Company.

7—Air Recovery Equipment

Twelve-page Dorex bulletin 108 makes available information on the use of Dorex activated carbon air recovery and air purification equipment. Included are equipment selection, application, specifications, and reactivation service. Dorex air recovery equipment is of two basic types – C Cells and Canisters.
Connor Engineering Corporation.

8—Fan Stack

Bulletin 572 has just been issued which describes the application of the P-D out-of-circuit fan stack to the steel and chemical industries. The stacks are capable of ejecting corrosive, erosive, explosive, product laden, and high temperature gases. Gases up to 2000 F are successfully handled.
Prat-Daniel Corporation.



9—Natural-Gas Cleaners

Data sheet 3-ATC-1, published by the Thermix Corporation, deals with a description and applications of the Aerotec dry method of cleaning natural gas. Bulletin includes a cutaway section of the gas scrubber showing the vortex tube used as a basis for scrubbing gas without use of fluids.
The Aerotec Corporation.

10—"Dustkop" Automatic Shakers

Bulletin 729 describes and diagrams automatic shaker attachments for single-filter Dustkop models 520, 800, 1150, and multiple-filter models 2030, 3050. Timing device, solenoid, and motor driven hammer actions are illustrated in detail. Photographs show a shop where automatic shakers are recommended.
Aget Manufacturing Co.

11—Industrial Dust Control

Bulletin 800 contains full technical information on industrial dust control and recovery equipment. Five types of dust filters are described in detail – four bag-type collectors, one cyclone type. Complete specifications for each model within each series are included. Photos illustrate existing dust control systems.
Dracco Division of Fuller Company.

12—Air Filters

"The Amazing Story of the Absolute Filter," 8-page bulletin 106C, gives ratings for new glass-asbestos medium with efficiency of 99.95% on 0.3 micron particles. Developed from filter originally designed for Atomic Energy Commission and now used for critical air-cleaning problems in industry.
Cambridge Filter Corp.

To order personal copies of these bulletins, please

13—Flue Gas Sampler

Data Sheet 5-ATC-1, published by The Thermix Corporation, describes the Aerotec flue gas sampler. Motor and fan are detachable for ease of handling. Units may be supplied with or without fans, and are equipped with the high efficiency Aerotec tube. Sheet 5-ASC-2 describes operation of Aerotec sampler.
The Aerotec Corporation.

16—High-Efficiency Cyclones

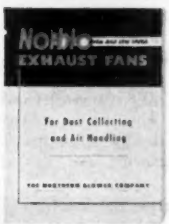
Bulletin C-103 describes design and construction of Buell high-efficiency Cyclones. Features include exclusive "Shave-off" port which traps extra percentage of dust, particularly smaller fines. Fully illustrated. Lists all information necessary for specifying. Covers importance of manifolding.
Buell Engineering Company.

14—Automatic Filter

Bulletin B-1400-2A describes the design and operation of the Roll-Kleen automatic filter. Unit is a disposable media filter which automatically changes media in face of filter when indicated by pressure drop. Units come in 3, 4, and 5 feet wide and from 5 to 15 feet high. Capacity tables, motor requirements.
Farr Company.

17—Coal Dust Control

Catalog SJP-1001 describes new Chem-Jet dust control systems for suppression of coal dust at rotary car dumpers, car shakeouts, track hoppers, conveyor transfer points, coal crushers, reclaim hoppers, and coal storage piles. Includes description of new Type A Hydro-Precipitator scrubber.
Johnson-March Corporation.



15—Dust Collecting Exhaust Fans

Catalog 1002-6, 32 pages, contains complete performance tables for Norblo high and low speed exhaust fans for dust collecting and air handling. Included are drawings of standard and special arrangements, tables of dimensions and capacities, a friction chart, test curves, and instructions.
The Northern Blower Company.

18—High-Velocity Air Filters

New two-page bulletin 130 describes new high-velocity Aerosolve filters which, in comparison with standard Aerosolve filters, provide 80% more air volume per sq ft of face area. Rated face velocity of 450 fpm permits use in high-velocity duct systems without V-ing. Interchangeable cartridges 35%, 85%, 95% efficient.
Cambridge Filter Corp.

AIR CONDITIONING, HEATING, AND VENTILATING

19—Exhaust Fans

Peerless catalog 230 covers the line of exhaust fans for industrial and commercial use: vertical and horizontal attic fans; duct fans; propeller-type roof ventilators; and direct-drive high-speed radial blade and pressure blowers. Automatic louvers for walls, ceilings, commercial and industrial penthouses.
Peerless Electric Company.

22—Roof and Wall Exhausters

Attractive 12-page illustrated bulletin DMXA-88 contains complete information on the entire line of Domex roof and wall exhausters. Illustrations, capacity tables, and dimensional data are furnished for convenient selection. Basic instruction features reveal direct air discharge design, spun scroll inlets.
Penn Ventilator Co., Inc.

20—Gas-Fired Air Make-Up Units

Bulletin 870 illustrates and describes new gas-fired air make-up units for natural, mixed, manufactured, and propane gasers. Four unit arrangements in four sizes from 36" to 54" for various capacities, Btu ratings, and pressure conditions. Self contained package for easy installation. Safe, dependable operation.
Aerovent Fan Co., Inc.

23—Vaneaxial Blowers

Sixteen-page bulletin A-110 gives descriptions, specifications, dimensions, and performance data on direct drive, belt driven, high temperature vaneaxial blowers in sizes from 12 to 54 in., including portable vaneaxial blowers. Blowers are listed for use against pressures as high as 7½-in. water gage.
Hartzell Propeller Fan Co.

21—Unit Ventilators

New unit ventilator control application loose-leaf file describes in detail control cycles for all leading types and models of unit ventilators. The booklet includes new face and by-pass units, and incorporates complete set of specifications and diagrammatic drawings for each. Tab permits easy reference in file.
Barber-Colman Company.

24—Scotch Type Steel Boilers

Catalog of Burnham scotch type steel boiler data furnishes design and engineering information regularly required by architects, engineers and the heating industry. Gives S.B.I. ratings, lbs. steam per hour – all pertinent dimensional data for complete specifications. Catalog is completely illustrated.
Burnham Corporation.

25—Propeller Fans

Bulletin A-109 gives descriptions, specifications, dimensions, and performance data on Hartzell's line of propeller fans for industrial ventilation. This 40-page bulletin covers standard, Lo-Noise, and high pressure fans; direct drive, belt driven, and bi-pass duct fans; unit heaters; and other ventilation equipment.
Hartzell Propeller Fan Co.

26—Air Conditioning Units

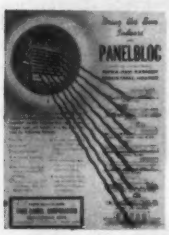
Publication 22-1 describes the AudiCon for quiet operation in school auditoriums, libraries, cafeterias, and administration areas. The unit heats, cools, dehumidifiers, and ventilates. Sixteen models available – 1250 to 15,000 cfm – 3 to 60 tons cooling capacity – 40,000 to 1,500,000 Btu per hr heating capacity.
John J. Nesbitt, Inc.

27—Room Air Conditioners

Catalog 7758 gives full information on remote type Roomaire Conditioners. Units available in capacities of 200 cfm through 600 cfm. Roomaire units provide year around conditioning of air: cool, heat, dehumidify, or circulate air. Complete sizing, performance and capacity data are included in catalog.
Young Radiator Company.

28—Space Heating Equipment

Twelve-page bulletin describes full line of high quality space heating equipment. Gas, oil, or combination fuel burners with on-off or full modulation controls. Output capacities range from 400,000 Btuh to 2,000,000 Btuh. Adaptable for space heating, air conditioning, ventilation, make-up air, and oven process heating.
Lennox Industries Inc.



29—Infra-Red Heating

Bulletin describes Panelbloc, modern infra-red method for industrial and commercial area heating. Features are: no fan, no motor, no moving parts, no power consumption, low cost, no fuel wasted, and no excessive heat loss at ceiling – radiates only to floor or working level. Catalog is illustrated.
Prat-Daniel Corporation.

30—Make-Up Air Unit

A new air make-up unit designed to temper outside air and supply it in sufficient quantities to eliminate negative pressures is described in bulletin 850. Make-up air units are available in seven unit arrangements in six sizes from 24 to 54 inches, with air capacities ranging from 4000 to 33,000 cfm.
Aerovent Fan Co., Inc.

31—Shell and Tube Condensers

Described and illustrated in the new Dunham-Bush 16-page catalog are the Heat-X 'CSTC' cleanable shell and tube condensers. Heavy duty, high capacity condensers. Construction details, dimensions, selection data, and performance charts are included.
Heat-X, Inc., a subsidiary of Dunham-Bush, Inc.

32—Door Heaters

Bulletin DH-2A describes line of door heaters from L. J. Wing Manufacturing Company. Designed to prevent chilling of large areas around open doors. Wing door heaters provide a hot-air curtain to protect workers when doors are open. Ideal for freight and truck loading entrances. Selection and engineering data.
L. J. Wing Manufacturing Company.

33—Multi-Zone Air Conditioner

Bulletin 870 offers illustrated description of new line of Herman Nelson central station units, capable of handling multiple zones. Also included are descriptions of components, accessories, capacities, and specification data. Eight sizes with air capacities from 3400 to 38,000 cfm.
Herman Nelson Division,
American Air Filter Co.

34—Ventilation Systems

This 60-page catalog describes Colt system of ventilation and wide range of equipment available. Since each building presents a different ventilation problem, each operating on the law of diminishing returns, Colt's customized chart instantly gives any engineer the cost of a variety of design solutions.
Colt Ventilation of America, Inc.

35—High-Velocity Valve Attenuators

Bulletin K-33-A describes and illustrates in detail Connor Engineering Corporation's Kno-Draft Series 45 high-velocity valve attenuators. Series 45 components, installation, and duct design information, selection and performance charts for each model are presented. This bulletin consists of 24 pages.
Connor Engineering Corporation.

36—Central Air Conditioning Fans

Fan catalog 27-6 for central air conditioning and ventilation systems contains essential data for selecting one of three basic lines. Capacity ratings are provided for class I and II fans for comfort and industrial processing air conditioning, heavy-duty class II and III units, and low pressure blowers.
Carrier Corporation.

37—Dual-Duct Air Mixing Units

Catalog DD-4 describes dual-duct air mixing units and accessories for automatic control of high-velocity air conditioning systems; permits wide conditioning variations even for adjacent spaces. Automatic control feature maintains constant volume despite variations in static pressure. Units are pictured, diagrammed.
Buensod-Stacey, Inc.

38—Automatic Controls Catalog

Catalog 28 describes the full line of Barber-Colman's automatic controls for heating, ventilating, air conditioning, and industrial purposes. Operational and application data is incorporated with the description of each control. Catalog also lists the locations of 95 field offices serving the U. S., Canada, and Mexico.
Barber-Colman Company.

To order personal copies of these bulletins, please fi

39—Heating and Ventilating

The Make-Up AIR, using Steelfin coil, now adds to its family a heating and ventilating unit, using Aerofin copper coil. All sections are individually supported, removable for maintenance or replacement. Nine basic blower sections available, in any rotation. Capacities from 1500 to 30,000 cfm listed in bulletin 567.
New York Blower Company.

40—Zone Control Cabinets

New 20-page bulletin AC-220 gives complete information on Type PCB Zone Control air conditioning cabinets. For use where several zones require heating, ventilating, and air conditioning in varying degrees. Illustrated bulletin covers construction features, physical data, dimensions, fan performance, and coil ratings.
Buffalo Forge Company.

41—Exhausters

This sixteen-page catalog covers Ammerman's AirXpeler. Catalog is divided into four sections. Section A discusses exhausters—wall or roof mounted, direct driven; Section B, exhausters—roof mounted, power operated and belt driven; Section C, dampers—back pressure, shutters, and louvers; Section D, fans.
Ammerman Company, Inc.

42—Fiberglas Power Roof Exhausters

Catalog gives full details on new Super Air-Van line of power roof exhausters in reinforced fiberglas, including features, rating tables, dimension tables, and specification data. Physical and chemical advantages of fiberglas units are discussed. These include quietness, corrosion resistance, strength, light weight.
The Gallaher Company.

43—Pressure Fans

New 20-page, fully illustrated catalog 857 describes a full line of fans designed for a range of operation of 10 in. to 50 in. static pressure and from 300 to 12,000 cfm. Wide variety of sizes and wheel diameters permits precise selection of proper unit. All fans adjustable as to discharge. Performance curves included.
Clarage Fan Company.

44—Radiant Heating

"Radiant Panel Heating with Steel Pipe," 48 pages, covers the history of this type of heating, basic design, floor, ceiling, and wall panels, information on snow melting systems, pipe coil integration, design of a floor coil system, and a boiler hook-up diagram.
Committee on Steel Pipe Research, American Iron and Steel Institute.

45—Cooling Towers

Towers For Industry—Bulletin 4.9.080A—discusses the structural and mechanical features of Pritchard induced draft, counter flow cooling towers. Drawings include cross-sections, a cutaway, and other detailed drawings. Photographs accompany drawings of most features. Dimensional diagrams are shown.
J. F. Pritchard & Co. of California.

46—Pneumatically Controlled Units

Bulletin 507 describes Armstrong pneumatically controlled units for humidifying anaesthetic gas areas in modern hospitals. Contains tables for determining humidification load from cfm capacity of duct. Illustrated with diagramistic drawings of units. Shows typical installations and gives price data.
Armstrong Machine Works.

47—Sub-Floor Construction

Bulletin contains 28 pages of information on this modern structural, electrical, air conditioning, sub-floor construction. Covers all aspects of Robertson's new high-velocity, dual-duct air conditioning system. Details, specifications, load and property tables, and photographs of actual erection of Q-Air Floor included.
H. H. Robertson Company.

48—Fan Noise Calculator

Slide-type calculator accurately predetermines room noise level caused by any number of installed fans. Based on Sone Loudness Ratings, a linear system incorporating both frequency and sound pressure, it gives true effect on human ear. Building or room size, acoustical treatment, fan speed accounted for.
Robbins & Myers, Inc., Propellair Div.

49—Genetron 11

New 36-page tables for the refrigeration engineer. Best available data, including new thermal data based on spectroscopic measurements; electronically computed; expanded range for saturated and superheat properties; smaller temperature, pressure intervals.
Allied Chemical Corporation, General Chemical Division.

50—Air Conditioning Equipment

Engineering catalog with illustrative and descriptive information and complete selection data on central plant conditioners, multizone conditioners, sprayed coil units, heating-ventilating units, cooling and heating coils. This catalog is notebook type and is index tabbed for easy and quick use.
Thermal Engineering Corp.

51—High-Velocity Duct Design Manual

Special 24-page manual contains 11 pages of performance tables; explains step-by-step computations on two work sheets for 10-story office building; shows schematic layouts; information on duct construction and duct insulation. Also included are tables of static regain and transition loss and elbow losses.
Anemostat Corporation of America.

52—Electronic Control Center

Bulletin EM58-1066 describes new standardized, fully automatic control panel for York Turbo water cooling system. All control equipment is consolidated at one central location. All controls factory wired to a terminal strip for easy installation.
York Corporation, subsidiary of Borg-Warner.

t the card between pages 2 and 3 or 42 and 43

53—Turbulator Units

Air-conditioning consultants and building managers will be interested in the new line of turbulators for zone control of air-conditioned buildings. Anemostat turbulators are high-capacity 800 to 7000 cfm units with special air valves and mixing vanes built as a package, for installation in a high-velocity system.
Anemostat Corp. of America.

54—"LoLine" Cooling Towers

"LoLine" cooling towers for air conditioning, industrial service are detailed in new 16-page bulletin, No. 5.1.902, Rev. 4. Available in two heights, units have low silhouette, high performance, attractive appearance. Literature contains engineering data, dimensional drawings, specifications, tables for both series.
J. F. Pritchard & Co. of California.

55—Genetron 22

New 36-page tables for the refrigeration engineer. Best available data, including new thermal data based on spectroscopic measurements; electronically computed; expanded range for saturated and superheat properties; smaller temperature, pressure intervals.
Allied Chemical Corporation, General Chemical Div.

56—Weatherproof Roof Ventilators

Bulletin 680-C describes Sky-Blast power roof ventilators. Weatherproof features include corrosion-proof, aluminum alloy propeller; non-clogging dampers and rain-shed; one-piece all-welded base hot-dip galvanized after fabrication. Automatic fire vent release optional. Sizes to 60 inches; air deliveries to 78,800 cfm.
Robbins & Myers, Inc., Propellair Div.

57—Controllable Ventilator

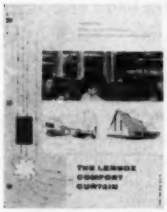
"Fire Prevention in Industrial Buildings" explains the reason for the spreading of the disastrous General Motors fire of 1953: lack of roof openings or any form of natural ventilation; and Colt's new combination controllable ventilator that is also an automatic fusible link in fire and a smoke ventilator.
Colt Ventilation of America, Inc.

58—Multi-Weathermaker System

Multi-Weathermaker System catalog WE-20 describes the wide flexibility of packaged air conditioning units to commercial and industrial buildings. The system can be installed all at once, or the building can be air conditioned in easy stages. The 24-page catalog contains suggestions on the design of the system.
Carrier Corporation.

59—Air Conditioners

New 40-page catalog 1309 covers Draw-Thru type central station units air conditioning built in Design 1. Both sprayed coil and general purpose types are described. Each available in horizontal and vertical arrangements. Dimensions, capacities, and numerous selection diagrams and tables are included.
Clarage Fan Company.

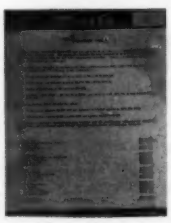


60—"Comfort Curtain" System

Twenty-eight page booklet describes completely new concept in the heating, ventilation, and air conditioning of school classrooms, churches, and commercial buildings. Air processing unit in each room with heating from central source or from individual classroom heaters. Modular design. Accurate control.
Lennox Industries Inc.

61—High-Velocity Dual-Duct Systems

First complete reference data on design and layout for multi-zone installation practice. Text, 24 pages, covers construction details, design procedures, basic air distributing schemes, air handling apparatus, budget costs, automatic control, winter and intermediate operation, specifications. Valuable for the designer.
Buensod-Stacey, Inc.



62—Heat-Transfer Tables

Bulletin 90 provides heat-transfer tables designed to save many hours of work in calculating air temperature, air volumes, and heat loads. Tables give directly the heat transferred in Btu/hr for each cfm of air heated or cooled from one wet bulb temperature to another. Tables are based on standard air density.
Marlo Coil Company.

63—Cooling Coils

Bulletin 880 contains complete coil selection information as well as detail-descriptive data. Construction specifications, dimensional data, circulating diagrams, capacity rating tables. Coils described are direct expansion coils and both standard and cleanable tube water coils.
Herman Nelson Division, American Air Filter Co.

64—Gas-Fired Unit Heaters

Bulletin GHC-3B describes newly designed line of Wing gas-fired, overhead unit heaters with revolving and fixed discharge outlets. Ceiling suspended, downward discharge. Complete, self-contained units offer uniform heat distribution. Catalog gives construction features and engineering data.
L. J. Wing Manufacturing Company.

65—Chillers and Condensing Units

Dunham-Bush bulletin 8027A describes and illustrates the 'ARPC' air-cooled package chillers and the 'RCU' remote condensing unit assemblies. The 'ARPC' units are at home on residential as well as commercial and industrial chilled water applications.
Heat-X, Inc., a subsidiary of Dunham-Bush, Inc.

66—Central Air Conditioning

Catalog 7558 gives performance, capacity, and dimensional data required to select proper size unit for given installations as well as selection example. Capacities range from 700 cfm to 28,000 cfm. Horizontal and vertical arrangements offered in 10 sizes — multizone units in 9 sizes, selection of 2 to 21 zones.
Young Radiator Company.

To order personal copies of these bulletins, please f

67—Roof Exhausters

Completely new 4-page bulletin SC-88 describes in detail the original acoustically insulated Sonotrol Curb. Dimensional charts for standard Domex and Dynafan roof exhauster sizes are listed along with drawings for flat or single pitched installation. Offers information on other factory fabricated curbs.
Penn Ventilator Co., Inc.

68—Cabinet Air Conditioner

Publication 600-1 describes the Nesbitt Roommate cabinet air conditioner with exclusive comfort-economy features . . . bypass control and air volume stabilizers. Also given in this 20-page illustrated catalog are construction details, arrangement information, capacities, selection data and dimensions.
John J. Nesbitt, Inc.

69—Water Chilling Unit

Bulletin EM-238 illustrates and describes unusual one-piece construction of water chilling system up to 350 tons. Compact assembly saves floor space, simplifies engineering layout, and eliminates any additional design drawing requirements.
York Corporation,
subsidiary of Borg-Warner.

70—Spray Nozzles

Yarway spray nozzles for air conditioning, general industrial uses, and water recooling are described fully in 12-page Bulletin N-619 (58). Spray characteristics, capacities, and dimensions of the non-clog involute nozzles, for ¼" to 2½" pipe sizes, and fan-spray nozzles, sizes ⅛" to 1", are given. Uses listed.
Yarnall-Waring Company.

71—Underfeed Stoker

Bulletin 604 covers the Detroit UniStoker . . . a ram feed single retort stoker with side dump grates, synchronized automatic control of coal and air supply. Entire grate is active burning area. UniStoker is an integral unit requiring little power for operation. Size range for boilers 12,000 to 18,000 pounds of steam per hour.
Detroit Stoker Company.

72—Axivane Fans

Bulletin J-610 is a seventy-six page book describing and tabulating all the Axivane fans suitable for heating, ventilating, and air conditioning. Included are five pages of fan selection tables and forty-seven pages of performance charts. Also included are engineering data and pictures of typical installations.
Joy Manufacturing Company.

73—Roof Ventilators

The Bell-Ex roof ventilator, aerodynamically designed to efficiently exhaust from hoods and duct work, and the VP-Ex (direct drive and belted), for use at lower resistances, are illustrated and described in bulletin 582. Complete descriptions of the centrifugal and propeller-type roof ventilators are given.
New York Blower Company.

74—Heavy Duty Space Heaters

Bulletin A1/2.1a describes the newly redesigned line of heavy duty space heaters for gas, oil, or dual fuel firing. The line includes 10 sizes of heaters, 400,000 to 2,000,000 Btu; all can be installed for up-flow, down-flow or horizontal discharge and can be used with or without ducts. Bulletin gives all data.
Reznor Manufacturing Company.

75—Multizone Units

Catalog 55C7c describes 9 sizes of Recold multizone units from 1320 cfm to 34,800 cfm, listing illustrations, arrangements, dimensions, specifications and selection data for chilled water, direct expansion and heating on all units. Units are equipped with Recold's patented "corner construction."
Recold Corporation.

76—High-Velocity Pipe Fittings

Two-color bulletin "Laminair-Flo" describes die-stamped two-piece 90° elbows in 3" to 8" diameters. Low loss fittings ideal for high-velocity systems. Bulletin contains chart and table of static pressure losses in various diameters and a table of specifications. Spiral Lockseam pipe is also described.
United Sheet Metal Co., Inc.

77—Load Estimate Pad

Bulletin AD-1702 contains accurate, time saving load estimate forms (padded) with heat-gain tables for cooling/heating load calculations. Five tables of factors based on engineering standards for air conditioning are included. Useful for determining cooling/heating loads.
Westinghouse Electric Corp.,
Sturtevant Division.

78—Inert Gas Generator

Operating principles of the Thermal Sub-X inert gas generator are detailed in four-page bulletin 114. A schematic piping diagram is given for both gas and oil operation, along with sizes for typical special installations, as well as a list of typical uses, dimensions, and pertinent specifications.
Thermal Research & Engineering Corp.

79—Coil Type Spray Dehumidifiers

Bulletin 37 gives complete information on Marlo coil type spray dehumidifiers for washing, cleaning, humidifying, dehumidifying, heating and cooling, available in 327 sizes, air volumes from 600 to 76,000 cfm. Bulletin includes design specifications, dimensional data, engineering data.
Marlo Coil Co.

80—Package Liquid Cooler

Sixteen-page bulletin gives complete details on Bell & Gossett liquid chillers. Capacities range from 7½ tons to 75 tons. Diagrams are included showing piping arrangements for various heating-cooling systems. Bulletin HB-258 is profusely illustrated showing the component parts of this package offering.
Bell & Gossett Company.

81—Gas-Fired Unit Heaters

Bulletin No. 9717 describing gas-fired unit and duct heaters contains charts and tobles providing such information as gas connection sizes, input Btu/hr, output Btu/hr, delivery, outlet velocity, fan motor horsepower and speed, fan diameter, and net weight.
American Blower Division, American Standard.

82—High-Velocity Air Valve

Simple, positive control of velocities and pressures with linear control of air volume is provided by a new high-velocity air valve. Composed of gang-operated neoprene vane sections, it has a variety of applications in both single and double duct installations. Complete information is contained in a new catalog, F-8752.
Barber-Colman Company, Uni-Flo Div.

83—Air Outlets

New 20-page catalog contains complete engineering and performance data in table form for sizing and selecting Thermotank round and drum type punkah lowvers. Dimensions, typical installations, and suggested applications for these air outlets, plus other data of value to the consulting engineer also included.
Air Devices Inc.

84—Condensation Units

In bulletin 425, tables and drawings show performance and dimensions of American-Marsh Junior Redi-Return condensation units in two basic sizes. Size No. 1 handles up to 5,000 square feet EDR at 20 lbs. discharge pressure. Size No. 2, up to 9,000 square feet at 30 lbs. Bronze fitted pump, copper bearing steel tank.
American-Marsh Pumps, Inc.

85—High-Velocity Controls

"Control of High-Velocity Double-Duct Air Conditioning" describes Honeywell's two basic methods of such control: a low-cost approach to constant mixed-air output; and a system which assures not only constant volume but also constant delivery of temperatures demanded by room-thermostat.
Minneapolis-Honeywell Regulator Co.

86—Centrifugal Exhausters

Bulletin 58-HC illustrates features of new Jenn Air Hi-D centrifugal belt drive all-aluminum power roof exhausters. Offered in 46 sizes with capacity ranges from 1085 cfm to 21,400 cfm featuring ball-bearing totally enclosed motors and full ball-bearing tubular drive assemblies. Bulletin is illustrated.
Jenn Air Products Company, Inc.

87—Wall Louvers

Adjustable wall louvers in 39 standard sizes, fixed louvers, combinations of the two types, and automatic louvers, are illustrated, with detailed data, in bulletin S.P.V. 17. Louver operators, screens, installation and construction specifications included. Special louvers in any available material.
The Burt Manufacturing Company.

88—Packaged Water Chillers

Catalog 515 describes new line of Acme Model RG Flow-Therm packaged water chillers. These units are 50% smaller and 30% lighter, on the average, than previous models. Chillers are completely assembled, wired, piped, and charged; ready to operate. 8 models, 3 through 30 tons. Capacity data and dimensions.
Acme Industries, Inc.

89—Air-Cooled Condenser

New six-page bulletin U-391 entitled "Kramer Unicon for Unlimited Tonnage" describes operation and application of Unicon, the original remote type air-cooled condenser for air conditioning and refrigeration equipment of any tonnage. Dimensions and selection tables are also included.
Kramer Trenton Company.

90—Scotch Type Steel Boilers

The Burnham scotch type packaged boiler incorporates a proven design with performance and capacity-tested boiler and burner for oil, gas, or combination gas and oil firing. Shipped as a complete unit, it is available in 8 sizes, certified ratings from 4,740 to 12,750 sq ft EDR steam. Engineering details given.
Burnham Corporation.

91—Cooling Towers

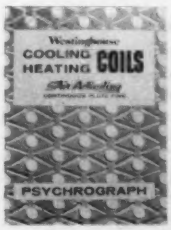
New bulletin VCT-78 describes the Philadelphia air-line cooling tower and air-cooled heat exchanger drives, manufactured to rugged AGMA standards to give many years of trouble-free service, yet the initial cost is lower than conventional units, with additional savings in installation.
Philadelphia Gear Works, Inc.

92—Cleanable Cooling Coils

Bulletin R-50 describes and illustrates Aerofin type R removable-header water coils. These are cleanable-tube extended-surface coils for cooling air with water. Principal advantages are easy cleaning of tubes and positive drainage. Engineering data for various pass arrangements are given to assist in selection.
Aerofin Corporation.

93—Air Conditioning Units

Catalog 54C7c and supplements describe 10 sizes of air conditioning units from 960 cfm to 34,800 cfm, listing illustrations, arrangements, dimensions, specifications, and selection data for chilled water, direct expansion, and heating. Units are equipped with Recold's patented "corner construction."
Recold Corporation.



94—Psychrograph Pads

Bulletin AD-1701 contains padded Psychrograph charts based on the latest Psychrograph data available and is a workable tool for translation of system-design loads, air volumes and temperature into specific operating conditions from which selection is made.
Westinghouse Electric Corp., Sturtevant Division.

To order personal copies of these bulletins, please fi

95—High-Velocity Systems Manual

Thermotank-Agitair 52-page manual contains complete engineering and performance data in table form for standard and constant volume perimeter and ceiling units. Dimension drawings, duct design, typical system layouts, installations, laboratory facilities, and other helpful engineering information included.
Air Devices Inc.

96—Power and Gravity Ventilators

Bulletin SPV-101-G contains design, structural features, performance, and dimension data for Burt's complete line of power and gravity ventilators and automatic wall louvers. Burt axial flow airfoil fans, fan motor housings, motors, bases, dampers and controls are also detailed in this complete catalog.
The Burt Manufacturing Company.

97—Ventura Fans

Bulletin No. 8914 describes the expanded line of Model IC Ventura fans. Tables list 42 low-pressure fans and 50 high-pressure fans, giving fan speed, motor horsepower, quietness rating. Installation drawings are provided; also a table of important dimensional data.
American Blower Division, American Standard.

98—Refrigeration Equipment

New illustrated 16-page catalog R450 on refrigeration and air conditioning units. Includes new Kramer Thermobank Compressor and new Cub Curvette. Enlarged sections on Unicon air cooled condensers, Winterstat pressure control system, and Thermobank automatic defrost system. Contains detailed rapid selection tables.
Kramer Trenton Company.

99—Axial Roof Exhausters

Bulletin 58-HA describes the new addition of the all aluminum belt-driven Hi-D axial power roof exhauster. Available in 24 models in capacity ranges from 3330 cfm to 28,650 cfm and equipped with totally enclosed ball-bearing motors and full ball-bearing tubular drive assembly.
Jenn Air Products Company, Inc.

100—Constant Volume Regulator

Stabilization of high-velocity systems is simplified with the new double duct mixing unit with self-contained constant volume control which is now available from Barber-Colman Co. Temperature control and volume regulation are treated as separate functions – operation of one cannot adversely affect the other.
Barber-Colman Company, Uni-Flo Div.

101—Packaged Water Chillers

The new line of Acme Model HE Flow-Therm packaged water chillers is described in catalog 535. These new chillers average 50% smaller and much lighter than previous models. Units are factory assembled and tested. Six models, 20 through 60 tons. Catalog includes capacity and dimension data.
Acme Industries, Inc.

102—Gas-Fired Heating Equipment

Bulletin A1/1.2A covers a complete line of gas-fired commercial and industrial heating equipment with capacities from 25,000 to 2,000,000 Btu. Includes fan and blower type suspended unit heaters, heavy duty space heaters, and sectional duct furnaces with matching cabinet blowers. Dimensions, specifications.
Reznor Manufacturing Company.

ELECTRICAL EQUIPMENT

103—Silicone Electrical Insulation

Over 50 silicone products, including electrical insulation, are described in new 16-page brochure 1-113. Included are high temperature paints and masonry water repellents; silicone lubricants for extremely high and low temperatures. Advantages of specifying silicone insulated motors and transformers shown.
Dow Corning Corporation.

104—Single Phase Transformers

Bulletin 100A contains, in table form, complete statistical information on Hevi-Duty single phase, dry type, insulating transformers, .050 to 500 kva, for power and lighting circuits. Photographs, dimension drawings, capacities, prices, temperature rise, weights, and dimensions are given for each transformer listed.
Hevi-Duty Electric Company.

105—Circuit Breakers

Bulletin 301, 16 pages, describes operation and application of Heinemann hydraulic-magnetic circuit breakers. It lists a complete line of 1-, 2-, and 3-pole breakers; gives standard current ratings (0.010 to 100 amps); shows time delay characteristics for branch and motor control circuits.
Heinemann Electric Company.

106—Press-Action Switch

"Presswitch" – quality you can put your finger on. For inductive ac lighting, including large 277 volt fluorescents. Withstands inrush and resistance loads at full rating and motor loads up to 80 percent of switch rating. Available in single-pole, double-pole, three-way, and four-way with nylon buttons.
Harvey Hubbell, Inc.

107—Panelboard Circuit Breakers

Bulletin 3103 covers the Heinemann series 0911, an economical panelboard circuit breaker dimensionally interchangeable with other makes. Available in 1- and 2-pole models, 0.050 to 60 amperes, the 0911 uses hydraulic-magnetic actuation to end heat-induced nuisance tripping. Fast short circuit interruption.
Heinemann Electric Co.

108—Electric Switches

Presswitch — a new concept in switch convenience and utility. Turns on or off with a light press or brush of the hand, finger, or elbow. Blends beautifully with conventional or ultra-modern interiors. The perfect answer for large or small fluorescent lighting installations in factories, offices, institutions, homes.
Harvey Hubbell, Inc.

109—Three-Phase Transformers

Bulletin 200 contains complete information about Hevi-Duty three-phase dry-type power and lighting transformers. Sizes range from 6 to 2000 kva. Illustrations, outline drawings, sound levels, capacities, prices, dimensions, weights, wiring diagrams, and temperature rise for each transformer are included.
Hevi-Duty Electric Company.

110—High Capacity Fuses

Bulletin HCS tells how Buss Hi-Cap fuses have unlimited interrupting capacity on any voltage up to 600 to provide safe protection for loads above 600 and up to 5000 amperes. Describes operating characteristics and advantages, illustrates dimensions, contains charts on current limiting effect and opening times.
Bussmann Mfg. Div., McGraw-Edison.

111—Complete Electrical Line

The BullDog '58 Marketeer, 80 pages, contains pertinent and technical data on BullDog products. Included are: Electrostrip, safety switches, lighting and power panelboards, switchgear assemblies, universal lighting duct, industrial Trol-E-Duct, and Bustribution duct. Comprehensive catalog is fully illustrated.
BullDog Electric Products Company.

112—Insulated Wire and Cable

Everything needed for the selection, design, installation, and operation of Kerite insulated wire and cable for light, power, and control service. Leatherette portfolio is tab-indexed to cover cable description, capacity, testing, technical tables, terminals, splices, and miscellaneous data of value to the consulting engineer.
The Kerite Company.

113—Vertical Hollow-Shaft Motors

Bulletin 212 covers new line of Ideal vertical hollow-shaft motors from 15 to 125 hp in frames 284 to 505. Includes cutaway showing outstanding construction features, design of nonreversing, self-release and rigid couplings, and engineered lubrication and ventilation systems. Specifications and dimensions.
Ideal Electric & Manufacturing Co.

114—Aluminum Conductor Busway

Bulletin GEA-6173, 24 pages, describes new 225-1000 ampere plug-in Flex-A-Power® busway with aluminum conductors. Designed for indoor use as a plug-in or feeder system in industrial plants and commercial building. Book lists features, applications, ratings, dimensions, and is fully illustrated.
General Electric Company.

115—Automatic Transfer Switches

"Factors in the Selection and Application of Transfer Switches" is the title of new 24 page publication 596R1 issued by the Automatic Switch Co. Inrush currents, thermal capacity, electro-magnetic effects, and other features are discussed. Many ASCO installations are pictured and described.
Automatic Switch Co.

116—Rigid Plastic Conduit

Bulletin KE 1058 lists physical, thermal, and electrical data for nonconducting Kraloy PVC (polyvinyl chloride) electrical conduit, with photographic installation details. Specifications for thin wall conduit (½" to 2") and standard wall conduit (½" to 4"), all connections, couplings, and fittings are included.
Kraloy Plastic Pipe Company, Inc.

117—Wiring Devices

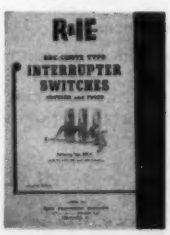
New improved catalog 29 lists and describes the complete line of wiring devices and enclosed switches developed and produced by Arrow-Hart. Each of the more than 130 pages features many large illustrations. Also includes dimensional data, many wiring diagrams, and important ordering information.
Arrow-Hart & Hegeman Electric Co.

118—Dry-Type Transformers

This bulletin 958 describes and illustrates Sorgel Electric Company's standard line of low sound level dry-type transformers in ratings of ¼ to 3333 kva single phase and 1 to 10,000 kva three phase, 120 to 15,000 volts suitable for varied installations. Consultants will find the book valuable.
Sorgel Electric Company.

119—Fluorescent Lamp Ballasts

Bulletin 1203 includes wiring diagrams for fluorescent lamp ballasts. Handy index includes lead length, dimensions, and lamp types for over 150 popular ballasts. Bulletin includes 9 schematics under the title of preheat, 6 under slimline and instant start, 9 under rapid and quick start, and 4 under circline.
Advance Transformer Company.



120—Interrupter Switches

Bulletin 1610A, 24 pages, describes and illustrates arc-chute type interrupter switches, fused and unfused, for switching feeder circuits. Usually metal enclosed, switch can be wall mounted, free standing, or grouped with common bus. Switches can close in on moderate faults.
R & IE Equipment Division, I-T-E Circuit Breaker Company.

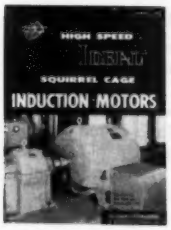
To order personal copies of these bulletins, please fil

121—Motor Control Selector

This new specification aid in "index" form makes it easy to select and order the right magnetic or manual starter for use with most single or polyphase 20 cycle, 1800 rpm, ac squirrel-cage motor applications. Also covers enclosures, push buttons, heaters, and other auxiliary equipment. Ratings, prices included.
Arrow-Hart & Hegeman Electric Co.

122—Dry-Type Transformer

Bulletin GEC-1600, 20 pages, offers quick and easy-to-use guide for specifying and ordering GE's complete line of dry-type transformers for commercial and industrial buildings. Popular ratings and sizes for 60-cycle indoor-outdoor single- and three-phase applications are included. Complete prices, and dimensions.
General Electric Company.



123—Squirrel Cage Induction Motors

Bulletin 210 illustrates and describes large, high-speed Ideal squirrel cage induction motors from 100 to 5000 hp at speeds from 514 to 3600 rpm in frames 584 to 1130. Complete description of design and construction with individual photos of sub-assemblies and method of simplified maintenance and servicing.
Ideal Electric Co.

124—High-Voltage Insulation

Bulletin EB-27-2 deals with development and properties of butyl rubber high-voltage insulation. Explains corona formation and differences. Detailed charts and graphs show heat and ozone resistance, high-voltage properties, di-electric strength, mechanical and electrical moisture absorption, impulse breakdown.
Anaconda Wire & Cable Company.

125—Distribution Centers

New 16-page illustrated bulletin, GEA-6619, gives complete details on General Electric's new dry-type integral distribution centers, tells how one-piece construction saves space, simplifies specifying, ordering, and installation. Model numbers, dimensions, and choice of incoming line components are given.
General Electric Company.

126—Bus Duct Systems

Bulletin BD-750 contains the basic descriptive information regarding the manufacture, design, and performance of BullDog BUStribution duct systems. Both the LO-X Feeder and the Plug-In bus duct systems are covered in the completely illustrated 16-page brochure. Bulletin of value to the consultant.
BullDog Electric Products Company.

127—Secondary Unit Substations

Detailed information on secondary unit substations—complete and compact load distribution centers for indoor or outdoor applications—in bulletin 3104-1A. Gives data and specifications on a large variety of primary devices, transformers and secondary switchgear offered in I-T-E secondary unit substations.
I-T-E Circuit Breaker Company.

128—Metal-Clad Switchgear

The latest technical information about Federal Pacific's 5 kv 75, 150, and 250 mva, 15kv 150, 250, and 500 mva metal-clad indoor and outdoor switchgear is contained in this new 64 page catalog No. 3-440. Includes a fully detailed section on dimensions and arrangements, complete constructions details.
Federal Pacific Electric Company.

129—Circuit Breakers

New 56-page catalog gives fast, full reference on circuit breakers and enclosures, Tranfo-Units, and high voltage switching devices. Prices for unit breakers and their respective enclosures are conveniently grouped by frame sizes. Informative selection charts indicate ratings, overcurrent devices, attachments.
I-T-E Circuit Breaker Company.

130—Dry-Type Transformer

New 8-page, slim-size bulletin, GEA-3424, gives 7 guides for selecting and installing Quiet dry-type transformers. It includes a chart on the average sound levels of typical locations and gives pointers on locating and mounting dry-type transformers. This bulletin also describes sound rating testing methods.
General Electric Company.

131—Electrical Equipment

Designing, testing, and manufacturing facilities for producing electrical equipment used by the missile industry are featured in bulletin 2707 just issued by Crouse-Hinds. Condulet electrical equipment and floodlights are described. Emphasis is on equipment for use in missile launching sites and test areas.
Crouse-Hinds Company.

132—Supply and Distribution Equip.

Publication 224 describes Flexlab equipment for high school electric shops. Illustrations and specifications are included on switchboards, power supplies, enclosures, service outlets, motor-generator sets, dynamometers, storage batteries. Also includes information on electric shop requirements, a shop layout.
The Standard Electric Time Company.

133—Enclosed Conductor Systems

Catalog 8-58, newly revised, describes Insul-8-Bar enclosed conductor systems for cranes, monorails, moving machinery. Contains complete engineering data, illustrated parts list, installation instructions. System capacities are 90 to 500 amperes. Standard catalog parts meet all installation and operation requirements.
Insul-8-Corporation.

134—Cable Fittings

"O.Z. Terminating and Splicing Fittings for Interlocked Armor Cable," 36-page engineering bulletin 135A, gives complete specifications, dimensions, cutaway drawings, photographs, and installation instructions. Prices and weights also are given for each item, along with ordering data, and available materials.
O. Z. Electrical Mfg. Co.

135—Cabletrays

Two systems of support for all types of cable, wiring, and tubing are described in a 26-page illustrated catalog. Systems are engineered to be used interchangeably, depending on the weight of the load to be supported at any location. Globetray, the ladder-type tray, and Cable-Strut, the basket type described.
The Globe Company.

136—Motors

Super-Seal open motors, bulletin 05-51B9040, can be used in applications formerly requiring TEFC designs. Savings are up to 60 percent. In any integral hp size, their superiority results from revolutionary new insulations. Motors with both epoxy-resin encapsulated stators and *Silco-Flex* insulated stators.
Allis-Chalmers, General Products Div.

137—Power Plants

Four-page bulletin outlines Electro-Motive's new 6000 kw peaking and reserve plant for electric utilities. Diagrammatic drawings show plant layout and application advantages as supplemental power to base load equipment. Includes engineering specifications together with locations of service facilities.
Electro-Motive Division, General Motors.

138—"Tranfo-Units"

Tranfo-Units, indoor or outdoor construction, with ratings of 45 through 3000 kva; primary 2.4 through 14.4 kv; secondary 120/208 through 600 volts. Pre-engineered load centers, for stepping down primary voltages, contain transformer and its primary and secondary distribution devices.
I-T-E Circuit Breaker Company.

139—Cartridge-Type Terminals

AMP's entirely new termination method for aluminum wire is contained in new 24-page catalog. New "cartridge-type" terminals inhibit oxidation, provide insulation support, reduce effects of cold flow, control heat rise, and assure even current distribution to all wire strands by symmetrical confined crimp design.
AMP, Inc.

140—Interchangeable Wiring Devices

Illustrated 6-page bulletin 2940, details full range of P&S Despard devices. Features full line of outlets including 3-wire grounding type, pressure terminal devices and switches for all installations including luminous Roto-Glo Quiet Switch, and various combinations of outlets and switches.
Pass & Seymour, Inc.

141—Rollout Switch, Fuse Equipment

GEA-6623 describes the new Rollout switch and fuse equipment which is available in ratings from 2.4 kv to 13.8 kv. The rollout feature makes the equipment as accessible as a file drawer for easy inspection and maintenance. With this new load-break equipment you also get improved protection and safety.
General Electric Company.

142—Electrical Equipment

A new 12-page pictorial bulletin 2706 briefly describes manufacturing facilities and electrical products of Crouse-Hinds Company. Emphasis is on the variety of equipment available in four product lines: Condulet electrical equipment, floodlights, aviation lighting equipment, and traffic control.
Crouse-Hinds Company.

143—Explosion-Proof Fixtures

Catalog 303 is an eight-page booklet describing and illustrating Appleton's vented explosion-proof incandescent and mercury-vapor lighting fixtures. Wattage changes are described photographically in a 58-second changeover. Various mounting methods and reflectors are also illustrated.
Appleton Electric Company.

144—Aluminum Conduit

Reprint of CONSULTING ENGINEER article by S. Starr and F. Rode of firm of E. E. Ashley, consultants. Reports results of extensive survey done for Alcoa by the Ashley firm. Many tables and graphs. Reports results of a survey of electrical contractors. Outlines installed economy in choosing aluminum conduit over 1¼".
Aluminum Company of America.

145—Fluorescent Lamp Ballast

Kool Koil, new advance fluorescent lamp ballast, is guaranteed to operate 15 to 20 degrees cooler, provide up to 15 percent more light output, with life increased 3½ to 4 times. Eliminates use of costly radiators. Bulletin gives average test data, technical data, and pertinent dimensions.
Advance Transformer Co.

146—Metal-Clad Switchgear

This newly published brochure by S & C Electric Company on the subject of metal-clad switchgear contains numerous photographs and one-line diagrams of many typical S & C switchgear units for industrial high voltage power distribution. Sizes from 2.4 kv through 34.5 kv are available.
S & C Electric Company.

147—Computer

Brochure S-525R1 outlines basic features, illustrates with major components. Specifications listed, with command table. Also small size, large memory of 4096 words. Electric typewriter with punched tape standard input-output. New optional reader, speed 200 characters. Combination reader and punch, speed 20.
Royal McBee Corporation.

148—Insulated Cables

Eighty-page catalog section (I-1-58) shows the current carrying capacities of paper insulated, rubber insulated, and varnished cambric insulated cables. Included in this catalog is valuable calculating data of interest to engineers working on electrical installations. Specifications also are included.
General Cable Corporation.

To order personal copies of these bulletins, please fi

149—Low-Voltage Circuit Breakers

GEA-5915 describes low-voltage switchgear for circuits to 600 volts ac and 250 volts dc and features the new stored energy closing mechanism which provides fast, positive closing. A compact, easily handled device, this newly designed AK-2 breaker can be easily installed in a wide choice of enclosures.
General Electric Company.

150—Technical Data Catalog

Illustrated 78-page catalog contains complete sections on technical data, engineering and research facilities, and cost and time studies. Technical data catalog tells the story behind the AMP terminal you specify for your client's requirements. Includes graphs and case studies of actual installations.
AMP, Inc.

151—Wire Gage Comparisons

Eight-page folder (I-9-58) includes comparative data—sizes, areas, weights—on the principal wire gages as follows: American Wire Gage (B.&S.) Steel Wire Gage (Washburn & Moen), Birmingham Wire Gage (Stubs), Old English Wire Gage (London), British Standard Wire Gage, and Metric Wire Gage.
General Cable Corporation.

152—Circuit Breakers

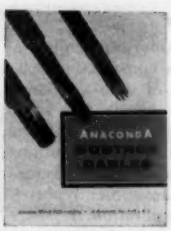
Bulletin 5042-A deals with Cordon current limiting circuit breakers on low-voltage systems, operational characteristic curves and ratings. Combine proven design and operating features of I-T-E molded case breakers and current limiting Amp-Traps to provide in one device, a current limiting circuit breaker.
I-T-E Circuit Breaker Company.

153—Aluminum Conduit

Latest available information on aluminum conduit, outlines fact that installed cost is less than steel in most installations of sizes over 1¼ inch. Lists, explains advantages: lower installed cost, corrosion resistance, nonmagnetic, light, appearance, nonsparking. Installation instructions, dimension tables included.
Aluminum Company of America.

154—Semi-Conductor Rectifiers

Bulletin 12B8897 describes the line of Allis-Chalmers germanium, silicon, and selenium rectifiers for power conversion. The air-cooling system is described and the bulletin contains a rating chart showing the application range of various semi-conductor and mercury arc rectifiers. Bulletin is illustrated.
Allis-Chalmers, Industrial Equipment Div.



155—Control Cables

Booklet DM-5704 is complete manual on Anaconda control cable. It shows typical installations, points out trends in automatic control, offers a guide for every control cable application, and provides complete property and construction information on Anaconda rubber and thermoplastic control cable.
Anaconda Wire & Cable Company.

156—Wiring Devices

Catalog 60, 75 illustrated pages, describes complete range of electrical wiring devices. Both the interchangeable Despard line and the P&S conventional line. Everything from switches to fixtures to devices for every purpose are listed. A 15-page index and price list is also included in this catalog.
Pass & Seymour, Inc.

157—Electrical Fittings

Loose-leaf catalog 135 has been prepared to provide all the technical information you need to select the right conduit fittings, cable terminators, cast iron boxes, and solderless connectors for each of your electrical installations. It includes a comprehensive index and a section of useful engineering data.
O. Z. Electrical Mfg. Co.

158—"Four Minute Tour"

"The Four Minute Tour" is a word and picture trip through the facilities and offices of Continental Wire. It points out some of the machines and operations used to make insulated wire and cable: taping heads, extruder, winder, braiding machinery, carders, varnishing towers, and types of inspection at each point.
Continental Wire Corporation.

159—General Purpose Relays

Bulletin 130-1 describes Wheelock's new plug-in-type general purpose relay. Conservatively rated and compactly designed, this relay meets all UL requirements. Coin silver contacts will handle 20 amperes, 115 volt 60 cycle ac or 24 volt dc. Complete specifications, dimensions, contact arrangements included.
Wheelock Signals, Inc.

160—Aluminum Electrical Connections

New Cadweld aluminum process is an exothermic type welding process. No outside source of power or heat required. Type connections possible are: aluminum cable to cable, cable to busbar, cable to bus tube, bus tube, busbar and transition welds to copper. Catalog presents complete technical, descriptive information.
Erico Products, Inc.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

161—Distribution Transformers

Bulletin S-401B describes and illustrates the company's complete line of distribution transformers for pole type mounting as well as for substation use. Weights and dimensions are given along with a full description of the type of construction. Also available are package unit substations for outdoor installations.
Standard Transformer Company.

162—Circuit Breakers

Six-page bulletin 3004-A contains descriptive and technical information about the FB line of high speed, current limiting dc circuit breakers. Principal applications of these breakers are for generators, motors, anode protection, and as feeder breakers. Wiring diagrams and outline drawings are included.
I-T-E Circuit Breaker Company.

163—Secondary Unit Substations

Secondary unit substation planning is covered in new 20-page bulletin 18B-6285D. Included are ratings, space requirements, application tables, and a detailed application and specification section to aid engineers assigned to electrical distribution problems. Bulletin is well illustrated with photographs and charts.
Allis-Chalmers, Power Equipment Div.

164—Batteries for Switchgear Control

Bulletin 210, 24 pages, is a detailed technical manual on the use of stationary storage batteries for switchgear control, and emergency light and power. Includes information necessary for selection of batteries, racks, and chargers; proper maintenance.
Exide Industrial Division,
The Electric Storage Battery Company.

165—Ballast Heating Control

General Electric engineers have answered several important questions about fluorescent ballast overheating in this new eight-page bulletin, "Let's Talk About Ballast Heating," GED-3328. The bulletin describes in easy-to-read language the causes, effects, and, most important, the solution to overheating.
General Electric Company.

166—Combination Duct Systems

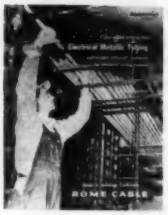
New, large capacity, combination duct electrical distribution systems are described in 20-page catalog 758. Two sizes of duct, eight junction boxes, and fittings are featured in this catalog. These systems were designed to meet the increased use of low as well as high tension service.
Walker Brothers.

167—Emergency Lighting Units

Bulletin 5926 describes new emergency lighting units with fully automatic battery charge control. Contains charts showing operational reliability, beam coverage, light intensity, and protection time. Describes units designed for mounting on posts, walls, or shelves.
Exide Industrial Division,
The Electric Storage Battery Company.

168—Safety Switches

Pocket-size folder lists and illustrates heavy-duty rain-tight WFS series safety switch Pylets. Feature quick make and break rust-proofed ferrous alloy, solderless terminals, fool proof padlocking. List includes 30, 60, 100, and 200 ampere-ratings, NEMA types 3 and 5. Folder also shows conduit hub plates.
The Pyle-National Company.



169—Thinwall Conduit

An illustrated 12-page bulletin discussing the features and construction of Rome Cable's EMT (thinwall) conduit. Installation and applications are discussed with several examples given. Tabular data for EMT, elbows are included in this bulletin. Packaging chart and EMT size chart shown.
Rome Cable Corporation.

170—Control Centers

Catalog SM-244, 16 pages, describes in detail the modern method for centralizing electrical power distribution and motor control equipment for industrial applications. It also contains suggested ideas for control specifications, and gives a simplified selector for use in control center layout and planning.
Square D Company.

171—Portable "Reelites"

Catalog 7P2 describes the new models of Appleton portable Reelites. Reelites is a trade name for Appleton's automatic takeup Reelite for electric cable. This four-page brochure lists and illustrates over 15 various lightweight Reelites and their accessories for many and varied purposes.
Appleton Electric Company.

172—Engine Fuel Comparison

Educational pamphlet M-102 deals with comparison of 3 basic fuels used by Onan air-cooled engines. Gasoline, gas, and diesel oil are reviewed as fuels, with descriptions of both piped (natural) and bottled (LPG) gas. The subject of Btu content of each fuel is discussed. The bulletin is illustrated.
D. W. Onan & Sons Inc.

173—Dry-Type Transformers

Bulletin S-202B describes and illustrates the company's complete line of dry type transformers for indoor and outdoor use. Sizes through 15 kva are available in compound filled cases for use in hazardous areas. The company also produces complete package type unit substations. Bulletin is written for the consultant.
Standard Transformer Company.

174—Low-Voltage Circuit Breakers

Twenty-page, two-color bulletin 6004-C provides a complete review of the company's new low-voltage power circuit breakers and switchboards, ranging in unit ratings from 225 to 4000 amperes. Advanced features of the new K-Line breakers, whose ratings are 225, 600 and 1600 amperes, are described.
I-T-E Circuit Breaker Company.

175—Wire and Cable

"Wire & Cable for American Industry," 72-page catalog, gives construction specifications for all types of wire and cable, such as: apparatus, appliance, audio, boiler room, building, coaxial, control, gasoline resistant, instrument, mining, power, railway signal, remote control, sheet lighting, and many other types.
Continental Wire Corporation.

To order personal copies of these bulletins, please fil

176—Ballast Sound

"A General Electric Report on Ballast Sound," GED-3164, gives an inside story on General Electric's ballast sound rating system. This new 8-page bulletin tells the reasons why it's just as important to specify the sound level as well as the light level of fluorescent lamp installations for a satisfactory result.
General Electric Company.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

177—Electrical Equipment

New 20-page manual gives comprehensive specification data on Square D electrical equipment – safety switches, panelboards, switchboards, dimmerboards, control centers, bus duct, and substations. The manual also includes convenient reference guide to National Electric Code requirements.
Square D Company.

178—Crystal Case Relays

Bulletin 160-1 presents specifications and dimensions of this new line of miniature relays. The entire relay assembly is hermetically sealed in an unusually compact case. Features are: high temperature rating, low power consumption, MIL specification qualifications, and availability for plug-in or solder connections.
Wheelock Signals, Inc.

179—Rigid Conduit

An illustrated 12-page bulletin describing the features and construction of Rome Cable's rigid conduit. Included in the bulletin are dimensions and weights of Rome's hot-dipped galvanized conduit, elbows, and couplings. Packaging and delivery of conduit is also discussed. Rigid sizing chart included.
Rome Cable Corporation.

180—Junction Boxes

Pocket-size folder gives comprehensive listing of blank, thick-wall type junction boxes. Listing includes sizes from 4 to 26 inches with and without mounting lugs. A universal type junction box is also shown, along with specifications, dimensions, and other information. Removable hub plates listed.
The Pyle-National Company.

181—Underfloor Electrical Systems

Catalog 354-I describes Walker Underfloor electrical distribution systems for concrete floors, "Cofar" floor construction, steel deck floors, wood floors, and floors with radiant heating. The catalog includes a section on service fittings to meet various requirements, including high and low tension service.
Walker Brothers.

182—Circuit Breakers

Bulletin 1604-A. Fully illustrated bulletin covers new K-Line low-voltage power circuit breakers. Breaker is spring operated for quick-make manual or electrical operation. Ratings are 15 through 1600 amperes continuous; 15,000 to 75,000 amperes interrupting. Circuit breakers available for 600-v ac and 250-v dc.
I-T-E Circuit Breaker Company.

HEAT EXCHANGERS AND WATER HEATERS

183—Package Boiler

Ad 166 describes the new Cleaver-Brooks monitor packaged boiler, which provides dry steam for modern industrial plants, laundries, food-processing plants and dairies, from the world's largest producer of packaged boilers from 15 to 600 hp, 15 to 250 psi. Burns oil or gas with equal efficiency.
Cleaver-Brooks Company.

184—Heat Transfer Coils

Bulletin 355 is a 52-page treatise on Dean Thermo-Panel Coils which "Take The Place Of Pipe Coils." Includes information on construction, specifications, standard types, curved panels, styles of embossings, materials, coatings, pressures, heat transfer, weight, capacity.
Dean Thermo-Panel Coil Division, Dean Products, Inc.

185—Computer Application Report

Brochure S-449 describes Brown Fintube use for creating heat exchanger designs. Reports all computations programmed. Illustrates data load input sheet, diagrams solution with output report. Nontechnical people able to fill in customer data directly from inquiry sheets. Engineers saved for creative work.
Royal McBee Corporation.

186—Water Heaters

Binder contains multi-colored bulletins on models together with specification sheets for the full line of Burkay water heaters. Gives complete information including dimensional drawings, on all types of commercial water heaters manufactured by A. O. Smith Corporation.
Permaglas Division, A. O. Smith Corporation.

187—Hot Oil Heaters

Brochure RE-342 describes the operation, performance, and product features of hot oil heaters for industrial and commercial applications where low pressure at temperatures to 600 F are needed. Specifications cover the type of fuel, capacity of burners, Btu input and output of six standard models.
Bros, Inc.

188—Heat Exchangers

Catalog HE-1 describes the Sims line of heat exchangers from tube size ⅜ inch O.D. to 1½ inch O.D. Both removable tube bundle and fixed tube plate types are cataloged in single, two, and four pass units They are built to any specifications desired. The hinged cover design was introduced by Sims.
The Sims Company.

189—Process Industry Heat Exchangers

Ross type C-100 exchangers — a new, highly flexible, fully standardized line for chemical industry are introduced in bulletin 302.5K1. Heat exchangers are readily assembled for any combination of liquids and gases without custom fabrication; for one-, two-, or four-pass designs.
Ross Heat Exchanger Division, American Standard.

190—Package Boiler

Ad 174 describes the new Progress packaged heating boiler for schools, apartments, hospitals, industrial plants, motels, and garages. This boiler is built in one of America's most progressive manufacturing plants—Cleaver-Brooks—long established as the standard of the industry. Available in 7 sizes.
Cleaver-Brooks Company.

191—Water Heaters

Condensed descriptions and specifications of the complete line of A. O. Smith Burkay water heaters. Information includes sizing dimensions, inputs, and recovery capacities. This 12 page bulletin is completely illustrated containing pictures of each model and dimensional drawings.
Permaglas Division, A. O. Smith Corp.

192—Heat Transfer Manual

This technical data manual defines and describes Tranter's four different Platcoil styles, employing graphic dimensions. Features and applications are also discussed and typical layouts are pictured. Calculations and charts computing pertinent temperature information are given as are tables concerning sizes.
Tranter Manufacturing, Inc.

193—Feedwater Heat Closures

Bulletin 201.1K1, four illustrated pages in color, presents redesigned high-pressure closures for Ross feedwater heaters and other high pressure, high temperature exchangers. Drawings show simple, conservative design. Describes engineering features.
Ross Heat Exchanger Division, American Standard.

194—Heating and Cooling Coils

Bulletin S-55 describes new smooth-fin heat-transfer coil construction that permits closer fin spacing, greater capacity per sq ft of face area, and use of higher air velocities without turbulence or excessive friction. It also illustrates many types of extended-surface heat exchangers for heating, cooling, and processing.
Aerofin Corporation.

195—After Coolers

Bulletin 132 describes the new panel casing construction method that makes the Aero heat exchanger fully accessible for cleaning and saves your client expense in shipping and installation. This is a self-contained cooling system for water, oils, and solutions that replaces the cooler and the cooling tower.
Niagara Blower Company.

196—Heat Exchangers

This catalog contains an engineering section that provides the engineer with the means to make size estimates of heat transfer equipment. It helps the engineer to select a heat exchanger that will provide economy of service, precise operation, and long life. Contains thermal standards and reference data.
Condenser Service & Engrg. Co., Inc.

197—Hot Water Storage Heaters

Catalog 512 describes the full line of RECO hot water heating equipment. This 20-page catalog includes tables, dimensions, diagrams, and details for both horizontal and vertical storage heaters. Special linings are indicated. RECO storage heaters are time-proved standbys for providing hot water.
Richmond Engineering Company, Inc.

198—Heat Recovery Equipment

Catalog HR-2, 16 pages, describes Sims exhaust gas boilers and other waste heat recovery equipment. Many case histories are included to point up how Sims converts engine exhaust gases on land and on ship into useful heat for hot-water heating or process steam. Performance table, dimensions also included.
The Sims Company.

To order personal copies of these bulletins, please fi

HIGHWAYS, BRIDGES, AND STREETS

199—Steel Joists

This 40-page steel joist catalog contains complete design information for spans up to 120 ft. It covers in detail design calculations, bridging, end details, and accessories. Complete tables of properties and dimensions, standard loading, and design load.
American Bridge Division, U. S. Steel Corporation.

200—Steel Bridge Flooring

Illustrated four-page bulletin on open steel bridge flooring, includes detailed drawings of steel flooring, details of concrete floor plans, and field welding diagram. Also included are load tables and diagnosis of load distribution on four-way grid. Illustrations show ease of handling.
Kerrigan Iron Works, Inc.

201—Metal Grid Decking

Irving decking catalog F-300 contains illustrations, descriptions, and engineering data on open metal grid bridge roadways, with many of the advantages inherent in this type of bridge roadway, such as light weight, cleanliness, drainage, safety, durability, strength, traction, and economy.
Irving Subway Grating Company, Inc.

202—Asphalt Curbs and Gutters

Information series 92 combined with Specification series 3 describes the methods and machinery used to construct asphaltic concrete curbs which are becoming increasingly popular because of the ease and speed with which they can be built, their economy, and rugged durability.
The Asphalt Institute.

203—Welded Bridge Construction

Bulletin 1301.4 is an article by Leonard C. Hollister of the California Division of Highways. Mr. Hollister describes, in considerable detail, the design and fabrication of the Carquinez Strait Bridge. The bridge is believed to be the first major welded cantilever truss-type structure.
The James F. Lincoln Arc Welding Foundation.

204—Reinforcing Wire Products

Catalog of American Steel & Wire products for use in highways and streets. Products included are: welded wire fabric, transverse road joint load transfer assemblies, multisafty cable highway guard, beam guard, high tensile wire, and strand for prestressed concrete.
American Steel & Wire Div., U. S. Steel Corporation.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

205—Bridge Flooring

This booklet contains complete descriptions, specifications, drawings, and design data covering all types of Am-Bridge I-Beam-Lok. Included are details of flooring applications plus a brief discussion showing how Composite Tee-Beam Action can be used with I-Beam-Lok.
American Bridge Division, U. S. Steel Corporation.

INSTRUMENTS AND CONTROLS

206—Specification Guide

Form 632 is a specification guide especially designed in handy folder form to assist consulting engineers to specify their choice of tank contents gaging systems for each project. Contains sample specifications for hydraulic system, and hydrostatic systems (manually operated and continuous reading).
The Liquidometer Corporation.

207—Time Recording Systems

"First Quality for Timing Accuracy" contains general description of electronic, synchronous wired, and Autoset impulse time and program systems with illustrations of the master time control, secondary clocks, and signals. Also illustrated and described briefly are attendance time recorders, job cost recorders.
Stromberg Time Corp.

208—Tank Contents Gaging Systems

Suggested specifications for tank contents gaging systems – hydraulic, hydrostatic, and direct reading – are given in bulletin 463A. Model selection guides and pictorial diagrams are included, along with a list of liquids successfully gaged by Liquidometer systems, and principles of operation of each gage.
The Liquidometer Corporation.

209—Clocks and Signals

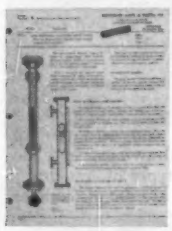
New architects' and engineers' catalog contains general descriptions, illustrations, specifications, and complete details on time and program systems (electronic, synchronous wired, Autoset impulse); clocks (secondary, synchronous, wall, double-faced, tower, special designs); signal equipment.
Stromberg Time Corp.

210—Recorders and Gages

Bulletin 24, though primarily intended to describe the Stevens Type F recorder which is a low-priced open channel liquid recorder of the graphic type, also devotes one page to staff gages. Four styles of gages are shown. All are white porcelain enameled with black figures and graduations, English and metric.
Leupold and Stevens Instruments, Inc.

211—Automatic Regulators

Four-page condenser catalog outlines the range of Foster automatic regulators for the control of pressure, temperature, liquid level, and flow; also flow tubes, an impact-type head meter designed for accurate measurement and regulation of fluid flow. Catalog contains 9 complete tables of specifications.
Foster Engineering Company.



212—Magnetic Gages

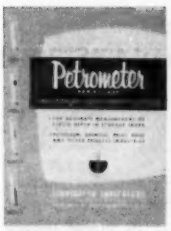
Data Unit No. 306 describes and illustrates the new Jerguson magnetic gage which is designed for gaging liquids under conditions where glass, gaskets, and threads cannot be used due to the high potential danger of explosion or fire if the slightest trace of gas escapes. Dimensions and specifications are given.
Jerguson Gage & Valve Company.

213—Direct Reading Tank Gages

Two-page bulletin F-40 describes OPW-Jordan direct reading tank gages. Gages are recommended for liquid storage tanks to 40 feet in height. Bulletin describes gage features and material specification. Picture shows typical installation. Other tank fittings are also described in bulletin.
Jordan Corp., OPW Corp.

214—Dewpoint Indicators

Bulletin DPI-4 covers dewpoint indicator which determines water vapor content in gases by measuring dewpoint temperature. A primary measurement instrument, indicator gives accurate readings from ambient to –100F. Portable battery-operated unit can check moisture content of dried air or gases.
Weighing & Control Components, Inc.



215—Liquid Depth Gages

Bulletin 6004 describes a new line of remote reading industrial liquid depth gages. It presents comprehensive information on operation and design of the Petrometer series 1400 gages, and on the method of selecting the right gage for remote indication of depth or quantity of liquids in tanks and pressure vessels.
Petrometer Corporation.

216—Valve Controls

"Limitorque Control," 30-page catalog L-550, gives background information on this automatic, power activated device for controlling all types of valves and sluice gates. It describes the available types and lists specific applications. Installations are shown in power plants, refineries, and in various industries.
Philadelphia Gear Works, Inc.

217—Liquid Level Controls

Preliminary literature has been prepared giving all mechanical and electrical specifications of a new group of top-mounting displacement operated Magnetrol liquid level controls. The new design has a wide range of applications due to the fact that specific gravities from 0.40 to 1.2 can be handled with a single stock unit.
Magnetrol, Inc.

218—Automatic Controls

Sixty-page catalog 858 illustrates a full line of mercury switch equipped controls for applications involving pressure, temperature, liquid level, mechanical movement; also hermetically sealed mercury switches and transformer relays. Available in various case styles for indoor, outdoor, or hazardous locations.
The Mercoid Corporation.

219—Fluid Control Valves

Catalog 70 describes valves for optimum fluid control (gas, steam, or liquid); actuated by pneumatic controllers; spring loaded (direct or reverse) or pressure balanced, diaphragm type actuators. Cast steel or alloy globe and angle bodies, single or double port; screwed and flanged connections.
Black, Sivalls & Bryson, Inc.

220—Direct and Remote Thermometers

Catalog 205, 12 pp., describes line of completely new dial direct- and remote-mounted thermometers, with mercury, gas, vapor, or organic liquid actuation, with aluminum or phenolic cases in various designs including variable-angle. Ranges, bulb sizes, connections.
U. S. Gauge Div.,
American Machine and Metals, Inc.

221—Wide Vision Remote Gages

Newly designed Eye-Hye remote gage for higher pressure is described in Sections C3.1B and C4.1D. Protruding reading medium permits observation of gage over 180° arc in front of panel. Complete description of three pressure-range model-groups, including dimension drawings. Fully illustrated with specifications.
The Reliance Gauge Column Company.

To order personal copies of these bulletins, please fill

222—Industrial Wired Television

Bulletin 2140 describes Model 500 closed circuit television camera system . . . compact and complete for industrial use. Camera is self adjusting to compensate for wide variations in scene brightness. Weatherproof housings available for outdoor use. Picture viewed on UtiliVue monitor or TV receiver.
Diamond Power Specialty Corp.

227—Closed Circuit Television

Vicon closed circuit television systems are described in new 6-page pamphlet V-1-58. The pamphlet gives complete illustrated data on Vicon cameras, camera control units, monitors, accessories. The Vicon systems provide exceptional picture clarity, continuous duty performance, are adaptable to all operating conditions.
Insul-8-Corporation.

223—Liquid Flow Recorders

Bulletin 25 illustrates and describes the function and various uses of Stevens Type B Recorder. Available in either wall panel or pedestal mounting this recorder is particularly adapted to waterworks, sewage, and industrial uses. Records and indicates flow and totalizes volume. Available in remote registering models.
Leupold and Stevens Instruments, Inc.

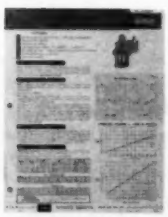
228—Safety Heads

Catalog 77 describes the positive protection against sudden buildups of overpressure provided by BS&B Safety Heads, a code-accepted pressure relief device. The unit consists of a prebulged metal rupture disc, firmly gripped between two flanges, that ruptures at a predetermined pressure.
Black, Sivalls & Bryson, Inc.

224—Gage with Auxiliary Alarm

Devices for attachment to or inclusion in Eye-Hye remote reading gages at factory, for actuating auxiliary remote signals, audible or visual, are described in Section C6.1D. Shows how the Levalarm attachment is used with low or high pressure Eye-Hye gages, describing various combinations of signals. Wiring diagrams.
The Reliance Gauge Column Company.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.



225—Solenoid Valves

New heavy duty solenoid controlled cylinder designed to handle load up to 375 lbs., is available. A built-in 3-way solenoid valve controls the single acting cylinder. Changes in stroke or load does not affect current inrush – thereby providing smoother operation. Complete details in "Solenoid Controlled Cylinders."
Automatic Switch Co.

229—Design, Application Questionnaire

Answers to all of the questions posed by the two Magnetrol application questionnaires will enable Magnetrol specialists to design a liquid level or flow control for the particular application involved. Since the design of the control is almost universally applicable, there are practically no application restrictions.
Magnetrol, Inc.

226—Industrial Gages

Catalog 305 introduces the entirely new USG "A"-Line of general purpose industrial gages, which conform to or exceed ASA Grade A standards. Various designs and sizes, for use in air, oil, steam, refrigerants, hydraulic or ammonia systems, compressors.
U. S. Gauge Div., American Machine and Metals, Inc.

230—Flow Tubes

The Gentile Flow Tube, now in use for metering water, air, steam, oil, jet fuel, hydrocarbon liquid, clay, slurry, raw sewage, brine, methanol vapors, black liquor, casing head gas, coke oven gas, argon, helium, sludge, white water, and paper stock, is described in six-page bulletin FT. Sizes start at ⅜ in. I.P.S.
Foster Engineering Company.

INSULATION

231—Pipe Insulation

Booklet IN-217A describes Metal-On pipe insulation, consisting of high temperature J-M Thermobestos insulation pre-jacketed with top-quality aluminum. Both insulation and integral jacket snap on pipe in a single operation. Joints are then sealed with aluminum "snap straps" fastened in place with metal bands.
Johns-Manville Corporation.

232—Underground Pipe Insulation

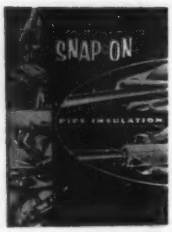
Four-page illustrated brochure discusses the problems of underground pipe insulation and explains how Gilsulate's special properties overcome them. On-the-job photos illustrate ease and speed of application. Thermal coefficients of transmission and other technical data and specifications are given.
American Gilsonite Company.

233—Underground Pipe Insulation

News magazine, published quarterly by the manufacturer of Gilsulate insulation for underground hot pipes, carries stories and articles dealing with problems of insulating these pipes. This issue (fifth) describes the role of Gilsulate in the school construction field. Shows photographs of actual construction.
American Gilsonite Company.

234—Insulated Housings

Brochure IN-215A describes Pre-Klad insulations for industrial use. Lightweight preformed blankets and insulated housings are made of refractory fiber insulation and heat-resistant foils or meshes to fit any shape, meet any service temperature to 2000 F. Used successfully by steel companies and diesel manufacturers.
Johns-Manville Corporation.



235—"Snap-On" Pipe Insulation

"Snap-On Pipe Insulation," eight-page booklet, describes characteristics and application data for one piece, fine-glass pipe insulation. Application specifications cover: plumbing, heating, insulation of valves and fittings, cold piping, and dual temperature outdoor piping. Thickness charts are also included.
Gustin-Bacon Manufacturing Co.

236—Pipe Insulation

Brochure J-531 describes new B-H 101 pipe insulation. Designed for lower cost installation of steam-traced lines and pipes up to 30 in. Felted mineral wool pipe insulation faced with 2 x 2⅝ in. 16 ga. galvanized welded wire fabric. Fast fastening—thread lead wires under stay wires, then bend. Data and specifications.
Baldwin-Hill Company.

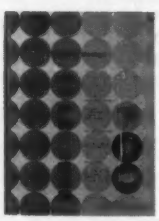
237—"Ultralite" Duct Insulation

Catalog ULD describes the use of Ultralite, the long textile type insulation for duct wrap and duct liner. Characteristics of Ultralite duct liner, together with application methods, are illustrated. Facings available, shipping information, and location of local stocks are given. This 8-page catalog includes specifications.
Gustin-Bacon Manufacturing Co.

238—Industrial Insulations Catalog

Just published, this fully illustrated 20-page catalog contains a temperature guide for insulation selection and data on Baldwin-Hill's complete line of industrial insulations and accessories. Thermal conductivities, graphs, recommended thicknesses, product sizes, and uses are given for each of 17 types of insulation.
Baldwin-Hill Company.

LIGHTING



239—Aluminum Lighting Units

Folio 59-1, a 12-page booklet, describes the McPhilben line of cast aluminum lighting units for special purpose applications. Divided into 3 sections: vaportight, weathertight lighting; exit and directionals; and general lighting. Revised specifications, dimensional drawings, applications and optional features.
McPhilben Lighting Inc.

240—Decorative Lighting Fixtures

A new 40-page full-color catalog detailing nearly 100 exclusive Lightolier Portfolio lighting designs. Contains precise dimensions and descriptions of each with suggested applications in contemporary or traditional interiors – both commercial and residential. Includes boldly scaled chandeliers, matching wall units.
Lightolier, Inc.

241—"Paraflo" Light-Air Diffuser

Bulletin OD692 presents new Paraflo light-air diffuser. This recessed troffer combines high visual comfort with quiet air diffusion. Perforated metal center vee louver provides low pressure drop with lateral-spread air diffusion. Design eliminates ceiling smudge. Each Paraflo unit delivers up to 150 cfm.
Day-Brite Lighting, Inc.

242—Specifications Book

New specifications are included in the 1958 RLM Standard Specification Book, a reference guide for those concerned with industrial lighting units, covering: 2-lamp and 3-lamp special service fluorescent units; 3 types of units using 800 ma. fluorescent lamps; new incandescent reflector sizes; new specifications.
RLM Standards Institute, Inc.

243—Lighting Fixture Catalog

All new 64 page tab-indexed catalog and technical data manual covering complete line of silvered bowl incandescent lighting and fluorescent lighting equipment. New indexed format for easy reference. Many new product listings including Color-Ceil for power groove fluorescent lamps. It is loose-leaf.
Silvray Lighting, Inc.

244—Residential Lighting Fixtures

Catalog M-163 displays and describes the complete line of residential lighting fixtures manufactured by the Moe Light Division of Thomas Industries Inc. Over 300 colonial, contemporary, and ultra-modern indoor and outdoor fixtures illustrated in full color. Complete specifications and recommendations included.
Thomas Industries Inc., Moe Light Div.

To order personal copies of these bulletins, please fi

245—Industrial Lighting Fixtures

The new, 12 page Guth condensed catalog provides a compact presentation of the complete line of Guth fluorescent and Brascolite incandescent luminaires for commercial, industrial, and institutional lighting applications. Data on surface and pendant mounted units, recessed luminaires, and Gratelite electric ceilings.
Edwin F. Guth Company.

246—New Lighting System

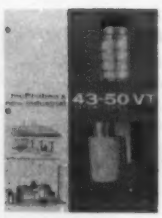
An unique new lighting system using power-groove fluorescent lamps to provide up to 300 footcandles of excellent quality illumination for offices, drafting rooms, stores, lobbies, and industry. Color-Ceil consists of 8′ x 6′ "floating panel" module using plastic eggcrate louver in white or pastel colors.
Silvray Lighting, Inc.

247—Lighting Newsletter

Industrial Lighting Newsletter – the first issue of the second volume of the continuing RLM service to specifiers of industrial lighting equipment – includes items on ballasts for high-output 800-ma. lamps, code numbers for mercury lamps, vaportight fixtures, porcelain enamel. Subscriptions are free to consultants.
RLM Standards Institute, Inc.

248—Surface Mounted Lighting

Bulletin OD691, Daylume surface mounted lighting elements, 12 pages, illustrates many of the installation possibilities of these very thin (3¼ inches) fixtures. Fixture available in 50 models, with glass and plastic enclosing elements. The bulletin also illustrates recessed Daylume fixture.
Day-Brite Lighting, Inc.



249—Aluminum Lighting Fixtures

Folio 58-7, 4 pages, describes McPhilben's new anodized cast aluminum lighting line for industrial and institutional applications. Ceiling units and wall brackets in both 100 and 200 watt sizes including accessories are illustrated with photographs and dimensional drawings. Specifications, applications, engineering.
McPhilben Lighting Inc.

250—Lighting Fixtures

Catalog page on Miller Sabre fixture for lighting stores, offices, schools, corridors, and public buildings. Fixture comes in 2 lamp, 4 foot size, one-piece wrap around refractor, shallow depth, sweeping lines. Catalog contains information on calculating illumination, application data, and specifications.
The Miller Company.

251—Commercial Lighting

Catalog M-1650 describes complete line of indoor, outdoor, recessed, modular, and strip commercial lighting fixtures manufactured by Moe Light Division of Thomas Industries Inc. Fixtures and settings illustrated in full color. Catalog furnishes information on inspiration lighting for commercial application.
Thomas Industries Inc., Moe Light Div.

252—Lighting Fixtures

Neo-Ray's lighting bulletin describes many different types of surface/recessed lighting fixtures, fluorescent and incandescent, in all modular sizes. Shielding mediums range from small cell louvers to Holophane Controlens, glass or acrylic. Recessed units furnished with jack-clamps for mounting in ceiling systems.
Neo-Ray Products, Inc.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

253—Recessed Lighting

A comprehensive 20-page catalog details the latest in recessed modular fluorescent lighting. It shows how 2′ x 2′ and 2′ x 4′ units of Optiplex, Domex, and Strialux are precision engineered to fit the new ceiling constructions, describes all design features. Catalog includes installation drawings, complete lighting data.
Lightolier, Inc.

254—Commercial Lighting Guide

Catalog L-100, 20 pages, gives features of lighting glassware, types of fixtures, Corning lightingware products and their applications in offices, schools, banks, hospitals, stores, and public buildings. Also gives lighting estimation tables for general area and display lighting. Illustrated, with four-color cover.
Corning Glass Works.

255—Lighting Fixtures

This 4 page brochure features Guth luminaires now available for 800 milliamp operation utilizing "HO", high output, lamps. Each unit with "HO" lamps provide approximately 50% more light than fixtures with standard 430 m.a. lamps. Includes fixture photographs, descriptive data, and catalog listings.
Edwin F. Guth Company.

MATERIALS HANDLING AND STORAGE

256—Materials Handling, Processing

Fully illustrated brochure 182, 36 pages, presents a report of R&S diversified services for coal and iron ore mining, steel mills, and railroads. It features materials handling and processing facilities; also ore beneficiation plants aside from specialized coal preparation plants and fabrication in well equipped shops.
Roberts & Schaefer Company.

257—Screw Conveyors

Bulletin 957 explains how Flo-tube moves materials mechanically with simplified manual or automatic controls. Flo-tube moves chemicals, coal, gravel, salt, sand, sugar, wood chips, and similar materials from bins and piles to receiving hoppers or processing machines at predetermined rates, at any angle.
Canton Stoker Corporation.

258—Materials Handling Equipment

Bulletin 5000A covers Conco custom-engineered overhead electric traveling cranes, of double girder construction. Can be furnished in a wide range of capacities and spans. Also included are hand-powered overhead traveling cranes, hand-powered and electric hoists.
Conco Engineering Works, Division of H. D. Conkey & Company.

259—Towboats

Bulletin 239 is a new 28-page booklet describing phases of river towboat design and construction. It is illustrated with more than 50 photographs, including several in full color. It devotes chapters to the specific nature of river transportation, towboat propulsion, control accommodation, and accessories.
Dravo Corporation.

260—Industrial Storage Silos

"Modern Industrial Storage Systems," 12-page brochure 4393, discusses the subject of storage for raw ingredients, semi-processed, or finished materials. The flexibility and adaptability of concrete silos is discussed. Descriptions of component parts and construction are supplemented with line drawings.
The Marietta Concrete Corp.

261—Linings and Tile Tanks

Scope of complete service — design, installation, and maintenance — of corrosion-resistant linings and tile tanks described in 4-page bulletin which also describes the types of membrane linings and tile types and shapes used in lining and erecting silos, slurry tanks, chests. Bulletin A-158.
Stebbins Engineering and Mfg. Co.

262—Concrete Storage Bins

Bulletin describes Super-Concrete storage bins for industry. Explains how bins are engineered specifically to purchaser's requirements. Describes the installation of concrete roofs and elevated floors, when desired. Lists materials stored and gives prominent users. Contains tables of capacities and photographs.
The Neff & Fry Company.

263—Tile Tanks and Chests

Kalamazoo vitrified glazed tile tanks and chests are described in four-page bulletin 1-55-T. Drawings and photos show how the two types of tile blocks available provide flexibility of wall design. Types, sizes, design, erection, and cost are discussed, and typical installation in industry are pictured also.
Kalamazoo Tank and Silo Co.

264—Car Pullers

Ten-page bulletin L-6 shows capstan type car puller for moving cars a short distance using manila rope. Three styles of drum car pullers for heavy duty car moving, shuttle work, or for servicing very large areas are also listed, as well as barge movers for shifting barges back and forth during unloading.
Clyde Iron Works, Inc.

265—Reprints for Framing

By popular demand, Graver Tank & Mfg. Co., Inc. again offers reprints of its current ad in full color, suitable for framing. This ad, which ran in the October issue of CONSULTING ENGINEER, is a view in tones of blue, showing the Graver-built million-gallon elevated water tank for Joliet, Illinois.
Graver Tank & Mfg. Co., Inc.

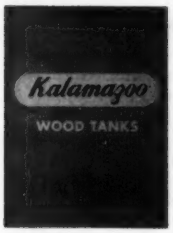
266—Process Equipment

Bulletin G-3B describes Fuller rotary compressors and vacuum pumps; horizontal-grate material coolers; Fuller preheater, Humboldt suspension type; Fuller-Kinyon Airveyor, and F-H Airslide conveying systems for handling dry, pulverized, granular, and crushed materials. Fully illustrated.
Fuller Company.

267—Automatic Weighing System

"Weight . . . Its Measurement and Control," 20-page catalog 12, compares batch-in, batch-out, and continuous weighing processes, and explains how a completely automatic weighing system can be assembled by building block techniques using W & C's Unitized weighing components.
Weighing and Control Components, Inc.

To order personal copies of these bulletins, please fill



268—Wood Tanks

Eight-page bulletin 655-W explains why wood tanks can meet conditions other types of tanks cannot. It describes round, rectangular, and special tanks, vats, boxes, sinks, and flumes and lists possible uses for each along with the type of hardware and lining available, and gives installation photos.
Kalamazoo Tank and Silo Co.

269—Concrete Storage Bins

Construction of Super-Concrete stave storage bins for industry is explained in the folder, "Bins with the Strength of Pillars." Contains tables of capacities and photographs of typical installations. Lists of prominent users, varieties of materials stored, and other uses for the bins are given in this valuable bulletin.
The Neff & Fry Company.

270—Reference Booklet

This handy reference booklet contains tables of circles and spheres, area and volume formulas, decimals of an inch and foot, tile shapes, standard reinforcing bars, wood pulp fiber in solution, capacities of tanks, conversion factors, and other information for use in designing tanks. Bulletin TC-155.
Stebbins Engineering and Mfg. Co.

271—Adjustable "Ripjacks"

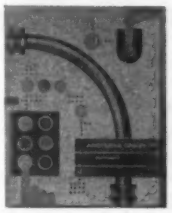
Bulletin RJ-C-100 describes in detail the design and operation of new *adjustable* Whiting Ripjacks. Built to speed bad order car maintenance and repair, Ripjacks can handle virtually any rail car with an absolute minimum of effort. Cross-section line illustrations show how Ripjacks are built and operated.
Whiting Corporation.

272—Standard Storage Tanks

Catalog 520 describes the RECO line of standard storage tanks including: bulk storage, basement, hydro-pneumatic, and underground. Also included is technical data on RECO air receivers engineered for all types of compressed air equipment. Including technical data, engineering specifications, tables, dimensions.
Richmond Engineering Co., Inc.

273—Tanks: Case Histories

The Echo, employee magazine of Graver Tank & Mfg. Co., Inc. offers in its current fall issue various case histories of Graver-built tanks and process vessels for different industries. Refinery tanks and spheres, caustic tanks, penstocks for drainage projects, and fuel oil tanks for office building heating are covered.
Graver Tank & Mfg. Co., Inc.



274—Pneumatic Conveying

Information on how pneumatic conveying has solved bulk-handling problems is presented in bulletin 530. System diagrams point out applications and flexibility of equipment. Photos illustrate typical installations. Bulletin lists materials which can be handled and illustrates available conveyor accessories.
Dracco Division of Fuller Company.

275—Belt Conveyors

Bulletin 948, four pages printed in four colors, details the advantages of wire rope type belt conveyors. This is the newest system of moving materials at low cost. Available in belt widths of 24", 30", 36", 42", 48". Illustrations show types of carrying idlers, types of rope stands with return idlers, and installation views.
The Jeffrey Manufacturing Co.

MECHANICAL POWER TRANSMISSION

276—Flexible Gear Coupling

Advantages and typical applications of flexible gear couplings are pictured and described in 16-page catalog C-4, "The Revolutionary New Sier-Bath Flexible Gear Couplings." Couplings are available in standard, vertical, millmotor, floating shaft, and spacer type, and in many special purpose types.
Sier-Bath Gear & Pump Co., Inc.

277—Right-Angle Gear Drives

Right angle solid shaft gear drives, for centrifugal pumps and industrial use — cooling tower installations, barge service, sewage disposal, fire and flood control—manufactured in a wide range of models to meet specific requirements, are described and illustrated with engineering details in eight-page catalog 29.
Johnson Gear & Mfg. Co.

278—Worm Gear Reduction Units

Complete technical data on entire line of Holroyd reducers (catalog 5016) includes hp and torque tables, efficiencies, dimensions, weights, and oil capacities for eight types of single and double reduction units. Single reduction ranges from 5:1 to 70:1; double, 25 to 4900, horizontal and vertical.
De Laval Steam Turbine Company.

279—Gears

A 20-page catalog describes in general the kinds and sizes of gears manufactured by this company. Its contents deal with spur gears, bevel gears, helical gears, worm gears, racks, nonmetallic gears, sheaves, sprockets, special machinery of which gears form a part. Illustrated with photographs.
The Earle Gear and Machinery Co.

the card between pages 2 and 3 or 42 and 43

280—Silicone Fluids

This eight-page brochure illustrates silicone fluid properties utilized as a medium in equipment designed for maximum reliability. Tables and graphs show how properties of silicone fluids remain stable over an extreme temperature range and increase efficiency for damping, springing, coupling, and related applications.
Dow Corning Corporation

281—Speed Reducers

A sixteen-page illustrated catalog, describing speed reducers as applied to operating machinery, particularly bridge machinery, is available. Outlined are specifications, service factors, horsepower ratings and dimensions of the particular units illustrated. Gasoline power units are also dealt with.
The Earle Gear and Machinery Co.

282—Turbine Pump Drives

Right angle turbine pump drives, in standard and combination drive installations and available in a wide range of models to meet specific requirements of high or slow speed prime movers and pumps, are described and illustrated in nine-page catalog 30. Tables show power ratings and average efficiencies.
Johnson Gear & Mfg. Co.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

PIPING, VALVES, AND PLUMBING

283—Asbestos-Cement Pressure Pipe

Illustrated booklet shows how "K&M" asbestos-cement pressure pipe provides first-rate water service economically. Thoroughly covers permanent, watertight sealing, long-life, and low installation and maintenance costs of "K&M" asbestos-cement pressure pipe. Includes table of standard sizes of "K&M" pipe.
Keasbey & Mattison Company.

287—PVC Pipe Fittings

Bulletin PF 1200, eight pages, presents a list of applications for PVC pipe and fittings where corrosion resistance, nontoxicity, and noncontamination are required. Mechanical, electrical, thermal, and miscellaneous properties of both normal impact and high impact PVC products are in table form.
The Luzerne Rubber Company.

284—Snow Melting Systems

Diagrams of actual layouts emphasize design and application in "Wrought Iron Pipe for Snow Melting Systems." Heat requirements, coil and grid patterns, use of anti-freezes, auxiliary equipment, paving, and fill are among design considerations discussed. Reports on airport and roadway systems also available.
A. M. Byers Company.

288—Steam Pipe Fittings

Condensed, 4-page catalog No. SS-140-B gives descriptions, specifications, and prices on Strong "Hydro-Flex" steam traps, strainers, reducing valves, and float and thermostatic traps. Included are the new ductile (nodular) iron traps and strainers for 600 psi that will bend or twist without breaking.
Strong, Carlisle & Hammond.

285—Bronze "Microcontrol" Valves

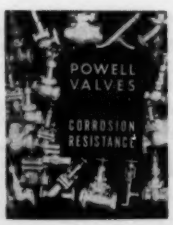
Fairbanks bronze globe and angle valves with 500 Brinell stainless steel full plug discs and seats for 150, 200, and 300 pounds pressure services are described in circular V-525. Valves are recommended for control of flow-throttling—the hardened stainless steel full plug discs, seats provide a tough, sensitive valve.
The Fairbanks Company.

289—Wafer Butterfly Valves

Bulletin 580 describes Rockwell's heavy-duty type butterfly valve for manual or automatic flow control of air, gases, steam, water, process liquids, and semi-solids. Sizes to 36 inches and special larger sizes. Standard valves are made of high-strength cast iron with carbon steel shafts. Pressure drop chart included.
W. S. Rockwell Company.

286—Valve Catalog Digest

This new valve catalog digest furnishes the latest coverage of the OIC bronze iron, cast steel, forged steel, and lubricated plug valve lines in a condensed form. Classified by type and pressure class, and illustrated, this edition also includes face to face dimensions for each size and type of valve listed.
The Ohio Injector Company.



290—Corrosion-Resistant Valves

Eight-page bulletin describes and illustrates a number of valves: gate, globe, angle, check, "Y", and flush bottom tank, and liquid level gages — for use in corrosive services. Also lists the wide variety of metals and alloys in which valves can be furnished and available sizes. Bulletin is illustrated.
The Wm. Powell Company.

To order personal copies of these bulletins, please

291—Swimming Pool Drains, Fittings

A new Section No., B-49-C-V, is announced by Norman Boosey Mfg. Co. This catalog section gives the consulting engineer everything at finger tip for any problem encountered in fittings for drainage and control of circulation in swimming pools. This new catalog makes it easy to specify the right drain.
Norman Boosey Manufacturing Company.

292—Welding Fittings

Bulletin 345 is metallurgical and engineering literature concerning piping stress calculations for Key-Kast alloy welding elbows made with uniform walls. The bulletin includes charts and graphs on flexibility and stress intensification values and moduli of elasticity for the fittings.
W-K-M Division of ACF Industries, Inc.

293—Valve Manual

Forty-page catalog B-2 is designed to help engineers select valve types, understand their characteristics, and determine space requirements. It includes such useful data as: pressure drop and flow tables, conversion tables, theory and application, recommended materials, and describes Pratt valves and operators.
The Henry Pratt Company.

294—Magnetic Valves

Within its 24 pages, catalog V-58 illustrates and lists specifications of magnetic and motorized valves for use with air, water, gas, steam, oil, and refrigerants, Also included are solenoid coil rating tables—one for liquids, the other for compressible fluids. Dimensional drawings are included.
The Mercoid Corporation.

295—Snow Melting Systems

"Steel Pipe Snow Melting and Ice Removal Systems," 32 pages, presents the case for snow melting systems and shows typical installations in commercial and industrial locations. Design data is complete with information on anti-freeze mixtures, sizes, and spacing.
Committee on Steel Pipe Research, American Iron and Steel Institute.

296—Flexible Ball Joints

Bulletin 31 contains layout diagrams, photographs, and data on how to solve problems of thermal expansion and contraction in piping economically with flexible ball joints. Applicable to piping runs of any length and of any diameter from ¼ inch to 12 inches, including high temperature steel piping.
Barco Manufacturing Company.

297—Pipe Welding Fittings

Catalog 54 describes and illustrates the complete line of butt welding fittings, explains advantages of unique method of manufacture. Elbows and other fittings up to 36 inches O.D. are listed with complete dimensional data. Catalog also describes facilities for fabricating piping and pipe coils.
Midwest Piping Company, Inc.

298—Valve Catalog

Catalog No. 56 describes and illustrates the complete lines of Jenkins diamond-marked bronze, iron, cast steel, and stainless steel valves recommended for every industrial, commercial, engineering, domestic, and plumbing and heating service up to 600 psi. Includes data on selection, installation, and maintenance.
Jenkins Bros., Inc.

299—Decontamination Booth

Specification sheet describes and illustrates fiberglas plastic decontamination booth, with eye-face wash fountain, and adjustable overhead and side body sprays. Weight on large platform treadly activates all fixtures, which instantly rids body and clothing of caustics, chemicals, and other contaminants.
Haws Drinking Faucet Company.

300—Flange Matching Tables

Handy tables help select correct forged steel flange to mate with plug valves. Where applicable bulletin 'TT880 also gives ring number, bolt diameter, stud-bolt length, and number of bolts. Covers carbon steel, stainless steels, and other alloys. File folder size for convenient reference.
Tube Turns div. of Chemetron Corp.

301—Unit Ventilator Valves

Bulletin P-56 describes Powertop unit ventilator valves from Powers Regulator Co. in ½", ¾", and 1" pipe sizes. Illustrations demonstrate finned tube radiation and unit ventilator applications, also operation, servicing, and disassembling procedures. Includes price list of recommended repair parts.
The Powers Regulator Company.

302—Steel Globe Valves

Catalog 14-B describes the new Edward line of "Flite-Flow" low-pressure-drop cast steel globe valves available in 1500 psi and 2500 psi pressure classes in sizes 10 in. through 18 in. ASA dimensions, ASA pressure-temperature rating, and ASTM basic materials specifications.
Edward Valves, Inc., Subsidiary of Rockwell Manufacturing Company.

303—Copper and Brass Tubing

This 12-page bulletin lists each type of Lewin-Mathes copper and brass tubing and piping with the temper, lengths, fittings, uses, and specifications. Sizes and capacities are in tabular form to aid in selection. Photos show use for water piping, air conditioning, heating, underground service, and drainage lines.
Lewin-Mathes Company.

304—Wall Drinking Fountains

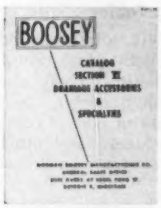
Illustrated specification sheet gives details on water coolers, for use with new or existing wall fountains, for restaurant serving counters and overhead wall brackets. Serves 60 people hourly. Quarter-horsepower fan-cooled condenser. Typical engineer's specifications, table of capacities, and dimensional drawings.
Temprite Products Corporation.

305—General Service Valves

Dimensions and detail drawings plus a parts list are included in 20-page bulletin E-165. Bulletin discusses class 125 single and double disc, class 250, cylinder-operated valves, lubricated valves, valves for emergency protection, steam-jacketed valves, and valves for boiler blow-off. Fully illustrated.
Everlasting Valve Company.

306—Remote-Type Water Cooler

Bulletin T-417 describes remote water-cooler application in plants, restaurants, schools, and like buildings. Single condensing unit serves multiple bubbler outlets or glass-filling stations; installs behind building walls, on overhead wall brackets; 6 to 24 gph. Complete specifications, dimensions, and capacities.
Temprite Products Corporation.



307—Building Drainage Products

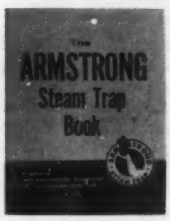
A new presentation of Section No. B-49-C-VI catalog, giving the consulting engineer everything at finger tip for any problem encountered in miscellaneous drainage of surfaces and equipment for his building, is announced by Norman Boosey Mfg. Co. This catalog replaces former bound No. 34 1949 edition.
Norman Boosey Manufacturing Company.

308—Blow-Off Valves

Bulletin B-427 (58) presents Yarway line of blow-off valves for boiler pressures to 415 pounds WSP. Full information on the A and B seatless types, available in two body patterns, and the double-tightening models, with direct-acting or gear-operated valves, is included. Also: How to specify and order.
Yarnall-Waring Company.

309—Drinking Fountains

Specification sheet gives details on series 60 wall fountains, in vitreous china with shielded angle stream heads. Series models are basically the same, differing in height of backs and addition of glass filler faucet. Simple, functional lines, and availability in color, make these fountains ideal for varied installations.
Haws Drinking Faucet Company.



310—Steam Traps

Catalog K, the Armstrong steam trap book, has been revised and expanded to 48 pages. New material includes complete data on Armstrong Open Float and Thermostatic steam traps; and strainers in ½ to 6 inch sizes in semi-steel; new pipe size tables; and additional data on trap selection.
Armstrong Machine Works.

311—Stainless Steel Pipe Fittings

New 86-page master reference volume on stainless steel pipe fittings gives detailed information on broad line of IPS and tube O.D. fittings, ASA, MSS, and corrosion weight. Technical section includes manufacturing standards, specifications, corrosion-resistance tables, and data on welding of stainless steel.
Ladish Company.

312—Glass-Lined Sewer Pipe

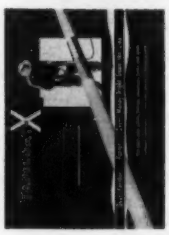
Folder deals with the glass-lined sewer pipe with a mechanical joint. Amvit Glas-Glaz pipe is available in 4-ft. lengths. It is root and infiltration proof and is glass lined inside and out. The pipe has been designed for an under-the-house drain and also as a house-to-street sewer.
American Vitrified Products Company.

313—General Purpose Valves

New drop forged steel screw and socket weld end valves, in sizes ¼ through 2 in., rated at 800 psi at 850 F and 2000 psi at 100 F are described in 32-page "General Purpose Valves, Gate, Globe, and Angle Types." Pressure-temperature ratings, specifications, and dimensions are given for each type valve.
Henry Vogt Machine Company.

314—Safety Cleanout Valves

Bulletin 4004 describes the Petrometer safety cleanout valve for safe removal of water and sludge from storage tanks containing volatile liquids, eliminating danger of fire or explosion. Construction features and operation are discussed. Valve can be connected to the tank through liquid level indicator lines.
Petrometer Corporation.



315—Pipe Protection Tape

Tapecoat X is a coal-tar protective coating in tape form for pipe, pipe fittings and joints, conduit, cable, insulated pipe, tie rods. Material is heated lightly with a torch, then wrapped onto pipe surface with one-half inch overlap. Provides protection on underground pipe equivalent to hot-applied coal tar.
The Tapecoat Company.

316—Fabricated Pipe Fittings

Bulletin 525 illustrates standard and special fabricated fittings which help in planning piping and equipment layouts. Data includes specifications and prints on standard fittings for light-weight pipe. The bulletin also illustrates special fabrications designed to save time and labor.
Naylor Pipe Company.

317—Swing Check Valves

New technical bulletin W-11 fully describes rubber-lined cushioned swing check valves for use in pulp, paper, and chemical industries. This valve may also be used in sewage lines for pump check service as well as to prevent reverse flow. General dimensions, parts list, specifications, installation, operation included.
Golden-Anderson Valve Specialty Co.

318—Stainless Steel Pipe Fittings

This 22-page catalog explains how Speedline stainless steel fittings reduce piping costs by allowing the designer to take advantage of the new and more economical schedules 5 and 10 stainless steel pipe. A schematic drawing illustrates industrial applications.
Speedline Stainless Steel Fittings Div., Horace T. Potts Company.

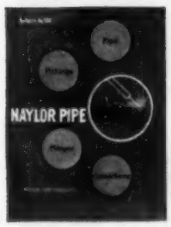
To order personal copies of these bulletins, please f

319—Welded Stainless Piping

"The Plastic Ductility of Austenitic Piping Containing Welded Joints at 1200 F" is a report of an investigation into the problem of selection of materials for main steam piping. It gives data on the stress rupture characteristics of types 316 and 347 stainless steel piping adjacent to welded joints.
Pittsburgh Piping and Equipment Co.

320—Instrument Piping Valves

Four-page Data Unit 302 contains illustrations and drawings showing how Jerguson valves combine unions, nipples, reducers, elbows, tees, valves, and drain valves into one space-saving unit. Applications information, specifications, and features of valves for instrument piping and general use.
Jerguson Gage & Valve Company.



321—Lightweight Pipe Fittings

New 6-page bulletin summarizes complete line of Naylor lightweight pipe, fittings, flanges, and connections. Lists typical applications. Includes standard specifications on pipe from 4 to 30 inches diameter, together with details on standard fittings and flanges. Covers Naylor Wedgelock couplings for pipelines.
Naylor Pipe Company.

322—Jointed Vitrified Clay Pipe

Jointed vitrified clay pipe known as Amvit, with a built-in mechanical joint made from polyvinyl chloride, is described in four-page folder. Advantages such as infiltration prevention, quick installation, immediate backfilling, better flow, shock absorption, and quick testing in the field are pointed out.
American Vitrified Products Company.

323—Coke-Quenching Valves

New technical bulletin W-15 fully describes coke-quenching valves. Installation arrangements, parts lists, and dimensions are included for both the G-A coke-quenching valves and their counterpart, the G-A drain valves. The latter are drop-tight when closed, provide full pipeline openings in open position.
Golden-Anderson Valve Specialty Co.

324—"Thermo-Panel" Coil Data

Prices and data on Dean Thermo-Panel Coils which "Take The Place Of Pipe Coils" for industrial heating and cooling processes. Bulletin 258 shows how to do your own estimating. Zinc metallizing; edge sealing; double and single embossed; heat transfer.
Dean Products, Inc.,
Thermo-Panel Coil Division.

325—Pipe Protection

Hot coal-tar protection in easy-to-apply tape form for pipe, pipe fittings and joints, conduit, cable, insulated pipe, tie rods. Material is heated lightly to soften the pitch, then spirally wrapped onto pipe surface. Tapecoat provides long-life protection that is equivalent to a hot applied coal-tar pipeline coating.
The Tapecoat Company.

326—Swing Joints

Twelve-page book gives complete information on OPW-Jordan swing joints. Free catalog describes swing joint features, applications, materials, styles, and sizes. Contains dimensional drawings and useful service recommendation chart. Sizes 1¼" through 6" in numerous styles and materials.
Jordan Corp., OPW Corp.

327—Prefabricated Piping Systems

The new edition of the Ric-wiL product catalog covers construction features for prefabricated, insulated piping systems for steam, hot water, oil, or refrigeration distribution lines. Types of systems covered include Hel-cor, Uniline, type J, and cast iron. Prefabricated accessories are also included.
Ric-wiL, Incorporated.

328—Sizing "Flowrite" Valves

Bulletin AE-1 gives data on application and sizing of Powers Flowrite valves. Illustrated pamphlet supplies complete sizing data, including formulas and different computation methods for gas, steam, and water service. Also includes examples of typical sizing problems and water-steam capacity charts.
The Powers Regulator Company.

329—Bronze Gate Valves

Circular V-261 features Fairbanks patented renewable seat ring bronze gate valves and presents basic design features and available sizes of Fairbanks full line of bronze gate valves. Includes screwed end, flanged end, and solder end valves and Fairco-Braze valves for silver brazed joints. Underwriters' approved.
The Fairbanks Company.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

330—Asbestos-Cement Sewer Pipe

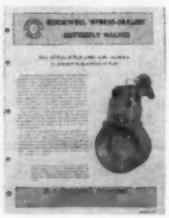
Five new crushing strengths and six sizes permit the selection of "K&M" asbestos-cement sewer pipe on basis of depth of cut, soil types, manner of bedding, and other laying conditions. Booklet includes handy crushing table based on the Marston Formula, plus information on its use in specifying pipe.
Keasbey & Mattison Company.

331—Anchor Forgings

Bulletin TT858 describes and provides dimensional data for Tube-Turn welding neck anchor forgings which hold high pressure lines immobile at valve settings, meter stations, and other installations where uncontrolled thrusts could damage equipment. Designed for 1200 psi and 90° F change in temperature.
Tube Turns div. of Chemetron Corp.

332—PVC Pipe Fittings

New, complete, twelve page, two color bulletin PF-1300 describes hard rubber pipe, fittings, and valves. Dimensions, chemical and physical properties of heat-resistant Buna-N compound and natural rubber as well as general information. Cross-section dimensional drawings of all types of valves are shown.
The Luzerne Rubber Company.



333—Butterfly Valves

Bulletin 579 describes "Stress-Sealed" butterfly valves for shutoff of fluid flow under wide variations in ambient temperature of fluid from minus 200 F to plus 1300 F, even in handling corrosive or dirty gases or liquids. This valve is designed and built to shut off within very narrow leakage tolerance.
W. S. Rockwell Company.

334—Strainers

Bulletin SS-21B gives data on complete line of strainers for steam, air, gas, oil, and water lines. Available in semi-steel, cast steel, bronze, block steel, and new ductile (nodular) iron. For collection of dirt, scale, and other foreign matter in the line, preventing clogging and damage to system and equipment.
Strong, Carlisle & Hammond.

335—PVC Pipe

Corrosion ratings in 400 chemicals are listed in types I and II PVC, and for eight ferrous alloys and nonferrous metals. Characteristics, applications, properties, and installation practices are described in 30 pages. Engineering data includes working pressures at elevated temperatures, head loss, friction factors.
A. M. Byers Company.

336—PVC Pipe

Bulletin KT-2-58 provides complete technical data on the Kraloy PVC (polyvinyl chloride) rigid plastic pipe line. Physical, thermal, and miscellaneous information is included for pipe sizes from ⅜ to 10 in. diameters, as well as diameters, inside and out, wall thicknesses, maximum pressures, plus weight.
Kraloy Plastic Pipe Company, Inc.

337—Bronze Valves

New bulletin fully describes line of Underwriters' Approved bronze valves for LP Gas service in gates, globes, angles, and checks, including face to face dimensions and table of approved disc sizes. Note: Introduced are new cast and forged steel valves with synthetic discs for hazardous LP service.
The Ohio Injector Company.

338—Steel Valves

Catalog 14 describes the complete Edward line of cast and forged steel valves for power, petroleum, chemical, marine, and industrial applications. Data includes ASA dimensions, ASA pressure-temperature ratings and ASTM basic materials specifications.
Edward Valves, Inc., Subsidiary of Rockwell Manufacturing Company.

339—Bronze Valves

New circular shows 150, 200, 300-pound bronze valves that offer such advantages as: full flow with least pressure-drop and turbulence, 500 Brinell stainless steel seats and discs, long life, little maintenance. Can be furnished with indicator arm, collar, and V-port disc for accurate visual control.
The Wm. Powell Company.

PLANT SITE AND EQUIPMENT DATA

340—Plant Site—Marley Neck

"Where Can You Pick a Plant Site Plum Like This?" is a broadside describing the largest deepwater plant site on the Atlantic seaboard, Marley Neck, Port of Baltimore. The booklet includes colored maps and a comprehensive air view of some 4200 acres on Chesapeake Bay near the heart of the city.
Baltimore and Ohio Railroad.

341—Scaled Models

"Designing in 3-D" catalog describes model-making techniques and new uses for models in plant layout, product design, process plant layout, topography, architectural, and structural. Lists thousands of parts available for model making-pipe, fittings, ladders, vessels, valves, and motors. Parts, sizes, prices.
Scott Industries, Inc.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

342—Aerial Surveys

Bulletin shows examples of topographic maps and photo mosaics made from aerial photography which are saving consulting engineers time and money. Also shown are 3-dimensional plotting instruments used in preparing topographic and planimetric maps to engineering accuracy.
American Air Surveys, Inc.

To order personal copies of these bulletins, please

343—Plant Sites

"Look Where a Site is Production-Right," 24-page brochure, presents data useful to consultants and executives responsible for new plant location. Illustrated with colored maps, it describes power, fuel, labor, water, weather, key materials, transportation, and plant sites that offer best plant site possibilities.
Baltimore and Ohio Railroad.

344—Scaled Models

"Designing in 3-D" brochure describes new ideas in do-it-yourself 3-dimensional drafting. "Designing in 3-D" is a concept of using scale models for original design engineering. The applications are almost unlimited: product design, process plant design, industrial plant layout, architecture, mining, construction projects.
Scott Industries, Inc.

POWER EQUIPMENT AND FUELS

345—Spreader Stoker

Bulletin 800 describes and illustrates the Detroit RotoStoker "CC"—a spreader stoker with overthrow rotor feeders. The unique design reciprocating grate continuously discharge ash at the front. Smokeless operation . . . burns a wide variety of coals. For boiler capacities to 75,000 pounds of steam per hour.
Detroit Stoker Company.

346—Boiler Service Valves

Bulletin E125, 22 pages, Everlasting boiler service valves, contains quick and slow opening straightway valves—Model W, angle valves, "Y" valves, duplex blow-off units, water column valves—Model W, and fire protection valves—opening and closing types. Includes a full page of material specifications.
Everlasting Valve Company.

347—Condenser Expansion Joints

Discussion of expansion problems of turbine exhausts with special reference to modern, large, or twin condensers is presented in this four-page bulletin. It shows construction of the Henry Pratt rubber belt expansion joint, and details advantages, such as simplified engineering of piping and temperature tolerance.
The Henry Pratt Co.

348—Practical Boiler Construction

Leading manufacturers of packaged boilers differ in arrangement of heating surfaces. Some of them insist that best design requires 3 or 4 gas passes through the boiler to extract heat from combustion gases. Others say it can be done with 2 passes. Continental boilers are designed for two passes.
Boiler Engineering & Supply Co., Inc.

349—Burner Equipment

This new 16-page booklet illustrates and describes Ray Burner equipment for firing oil, gas, or combination oil or gas: manual, semiautomatic, and fully automatic models; rotary, pressure atomizing, inshot gas, packaged forced draft boiler-burner units. A burner for every domestic, commercial, or industrial need.
Ray Burner Company.

350—Underfeed Stoker Applications

Revised, expanded edition of guide specifications for underfeed stoker applications to boilers best suited to commercial and industrial heating plants (750-6000 lb/hr), with drawings of flexible layouts of efficient, economical equipment. Specification criteria cover coal and ash handling, boilers, stokers.
Bituminous Coal Institute.

351—Heavy Duty Fans

New bulletin FD 905 covers the complete line of mechanical draft and other heavy duty fans. Information covers shafts, housings, inlet boxes, variable inlet vanes, dampers, bearings, shaft seals, blade and scroll liners. Applications discussed include forced and induced draft, primary air, cyclone compressors.
Buffalo Forge Company.

352—LSV Engine Bulletin

Gas, diesel, gas-diesel engine type LSV specifications bulletin gives description and specifications of vertical four-cycle, 12 and 16 cylinder stationary units for applications ranging from 1375 to 5000 horsepower. Included are cross-section photographic drawings, space plan, and rating curve.
The Cooper-Bessemer Corporation.

353—Fan-Type Underfeed Stokers

Bulletin 203 contains specifications for using Vulcan stokers where capacities up to 3500 lbs of coal per hour for loads up to 800 hp are required. "Synchro" combustion controls automatically adjust fuel-feed, air supply, boiler draft, and combustion rates. "Turbo-Aire" system complies with smoke regulations.
Canton Stoker Corporation.

354—Mobile Generating Plants

Trailer mounted mobile generating plants, complete rolling power stations, are described in this plastic-bound handbook. For temporary tie-in, or semipermanent installation diesel or dual fuel operation these mobile plants may be practical. In four sizes: 350, 500, 1000, and 1250 kw.
White Diesel Engine Division,
The White Motor Company.

t the card between pages 2 and 3 or 42 and 43

355—Steam Turbine Generating Units

New Allis-Chalmers bulletin 03B7634A describes WA-Series steam turbine generating units, rated 2000 to 16,500 kw, for utility and industrial service. Four basic types – condensing, noncondensing, condensing automatic extraction, and noncondensing automatic extraction –are described.
Allis-Chalmers, Power Equipment Div.

356—Water Tube Steam Generator

Water tube type D Superior steam generators with capacities up to 50,000 lb steam per hour are described in eight-page bulletin. With the literature comes a 12-page folder of specifications prepared to aid consulting engineers in selection, evaluation, and specification of water tube packaged units.
Superior Combustion Industries, Inc.

357—Pipeline Strainers

Bulletin 6 deals with liquid strainers, single and duplex, for pressures from gravity to 900 psi. Capacities from 6 to 7500 gpm of water or 50 viscosity oil at 6 psi pressure drop. Mesh size 8 to 200, depending on liquid and contaminant. Strainer basket catches all contaminant; none is left in shell or piping.
William W. Nugent and Company, Inc.

358—Spiral-Wound Gaskets

General catalog, 28 pages, tells about the development of the original spiral-wound gasket and its present applications in aviation, atomic research, process industries, power plants, and ships of the Navy and Merchant Marine. It also lists various metals and fillers used in the manufacture of these gaskets.
Flexitallic Gasket Company.

359—Package Boilers

Catalog P391, 16 pages, describes the new Type VP package boiler. Following a section of background information is an outline of principal design features. These boilers are shop assembled and provide steam capacities from 4000 to 42,000 lb per hr. Space requirements and specifications are in table form.
Combustion Engineering.

360—Package Steam Generators

Bulletin PSG-2, 10 pages, presents design and construction details, tables of capacities, dimensions, and weights of package unit type steam generators. Available in three standard pressures of 175, 250, and 375 psig, the boilers are designed to be used with different types of firing and control equipment.
Henry Vogt Machine Company.

361—Three-Pass Package Boilers

Webco-Ray automatic 3-pass packaged boilers for heating, power, and process steam are featured in the 1958 Webco catalog. Ratings, data, dimensions, installation details, and other specification data are given in this 8-page booklet. Capacities of these packaged units range from 25 to 600 boiler hp.
Western Boiler Company.

362—Steam Traps

Bulletin 808 describes the new 500-C series steam traps, – combination open float and thermostatic type. Fully illustrated, this 4-page color brochure includes a table on condensate. Trap capacity in lbs/hr of hot condensate. Dimensions and price list also included. Traps have straight-through connections.
Wright-Austin Company.

363—Water Tube Package Boilers

Bulletin 1100 describes new line of completely automatic coal-fired water tube package boilers for steam or hot water generation. Available for low or high pressure service in capacities from 71.6 to 300 hp. Generator features unique, water-cooled pulsating grate, automatic coal feed, and ash removal.
The International Boiler Works Co.

364—Steam Turbines

A collection of twenty bulletins, illustrating and describing Terry solid-wheel, helical-flow turbines; single-stage and multistage axial-flow turbines; and a number of different types of governors for various applications. Approximate dimensions are included for many of the types and sizes of turbines described.
The Terry Steam Turbine Company.

365—"Compact" Package Boiler

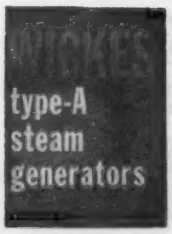
New 3-color catalog describes features of the Superior Compact packaged boiler. Unusually compact, providing economies of installation, the Superior Compact has four-pass design, 5 sq. ft of heating surface per bhp, and induced draft. Data and dimensions included for 11 sizes from 20 to 300 bhp, firing oil or gas, or both.
Superior Combustion Industries, Inc.

366—Atomizing Fuel Oil Burner

The Todd Vee-Cee type variable capacity mechanical atomizing fuel oil burner for installations with widely fluctuating loads is fully described in four-page bulletin TD56-16X. Bulletin shows special construction that gives uniform, easily oxidized spray, constant pressure, and quick cold starting.
Todd Shipyards Corp., Products Div.

367—Diesel Engines

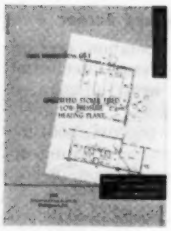
Complete 80-page catalog includes power curves, sectional drawings, and subassembly photographs of six basic engines in 19 models, a power range of 100 to 2150 bhp. Diesel, gas, and dual fuel engines and generator sets are available as a custom installation.
White Diesel Engine Division,
The White Motor Company.



368—Water Tube Boilers

Wickes Type S steam generators, two-drum, water tube boilers built to a design pressure of 725 psi, are described in catalog 55-2. These units combine the water cooled furnace as an integral part of the boiler, adapting the high and low type furnace to the desired type of firing – coal, oil, or gas.
The Wickes Boiler Company.

To order personal copies of these bulletins, please fi



369—New BCI Guide Specifications

New guide specifications cover package and shop-assembled, automatically controlled, coal-fired water tube boilers for steam and hot water heating and process systems (GS-2, 10,000-40,000 lb/hr; GS-3, 2400-10,000 lb/hr) for low initial plant cost, continuous high operating efficiency. Flexible plant drawings.
Bituminous Coal Institute.

370—Boilers and Stokers

Complete descriptive and specification information on rugged Scotch boilers for gas, oil, and coal firing, and automatic underfeed stokers for Scotch type boilers, is given in 28-page bulletin 236. This illustrated brochure includes test results, performance data, and details of design and construction.
The James Leffel & Co.

371—Integral-Furnace Boiler

Bulletin G-94 describes B&W's newest integral-furnace boiler, Type PFI. This new pressurized-furnace, oil and gas fired steam generator is designed for power, process, or heating loads requiring steam capacities up to 400,000 pounds per hour at pressures to 1150 psi and steam temperatures to 900 F.
The Babcock & Wilcox Company.

372—Emergency Electric Plants

New folder describes entire line of Onan emergency electric plants, controls, and accessories. Typical applications in hospitals, schools, stores, industries shown. Simple description of the function of Onan's automatic line transfer control is presented. Onan installation requirements listed.
D. W. Onan & Sons, Inc.

373—Steam Condensers

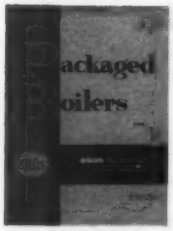
Features and applications of company's line of steam condensers are detailed in this 24-pp illustrated bulletin. An engineering section offers formulas for determination of heat transfer rates, pressure drop, and other pertinent factors. Air removal equipment, maintenance, steam condenser specialties.
Condenser Service & Engrg. Co., Inc.

374—Cast Iron Boilers

Twelve-page catalog of commercial and industrial cast iron gas, oil, and stoker boilers. Net gas ratings to 3105 MBH (119.5 hp), net oil ratings to 2942 MBH (113.2 hp); ratings approved by Institute of Boiler & Radiator Manufacturers. Catalog contains description, ratings, dimensions, and drawings.
Weil-McLain Company.

375—Complete Package Boiler

Bulletin MR-1A describes the new Model "R" Amesteam generator. The Model "R" is a complete packaged firetube, modified Scotch Marine design boiler. Offered in 10 hp through 600 hp; 15 through 250 pounds design pressure. Table of generator ratings is included in the bulletin.
Ames Iron Works.



376—Package Boilers

Bulletin WT-10 describes and illustrates packaged boilers, with capacities from 8500 to 50,000 lbs per hour at standard design pressures up to 250 psi. Drawings and specifications, design and construction features are given in detail. Bulletin also shows how these boilers fit into your clients' planning.
Bros, Inc.

377—Hot Water Boilers

"Package Boiler Economy for Modern Hot Water Systems," describes Cyclotherm's Cyclonic Combustion, a patented principle, now incorporated in a design to efficiently produce hot water. No other type boiler can match the package unit for economy of space and fuel.
Cyclotherm Division,
National-U.S. Radiator Corporation.

378—Forced Draft Package Burner

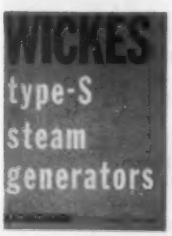
If your client needs a factory assembled burner that can be installed with minimum cost and time, send for four-page bulletin 10M-2-15-57 on the Johnson forced draft package burner. Units that burn oil, gas, or either are pictured with a detailed description of operation and special construction features.
S. T. Johnson Company.

379—Retracting Soot Blowers

"You Clean Boilers Better and at Lower Cost with Diamond Blowers," 14-page bulletin 2111, details construction features of the Series 300 IK Long Retracting Blowers. It describes the stationary gear motor drive, motor and control terminal facilities, valves, nozzles, carriage drive accessories.
Diamond Power Specialty Corp.

380—Commercial-Industrial Burners

Twenty-page catalog describes Petro commercial-industrial oil, gas, and dual fuel burners used for heating, power, and process steam requirements. Includes section on "How to Select a Burner." Illustrates several typical installations and various burners, from 8 through 200 gal per hr oil capacity.
Petro.



381—Two-Drum Boilers

Wickes Type A steam generators, compact, efficient, shop assembled water tube boilers, are illustrated and described in catalog 56-1. It gives typical superheater arrangements for the boilers with section, plan, and side views of drainable "S," pendant, and drainable superheaters. Specifications are given.
The Wickes Boiler Company.

382—Pneumatic Spreader Stokers

Detailed information on P.S. series 401 stokers, which automatically meter, dry, preheat, convey, and efficiently fire all sizes and grades of coal, from lignite to the best bituminous. System continually adjusts firing rate to steam demand. Booklet liberally illustrated with cutaway views, photographs and diagrams.
Iron Fireman Manufacturing Company.

383—Stationary Engines

Bulletin SA-609 gives specifications and performance data on V-122 and V-125 12-cylinder stationary gas engines, with maximum horsepower ratings of 520 and 605, respectively. Units are for standby or continuous duty power for sewage treatment plants, municipal water works, and other industrial applications.
Climax Engine Manufacturing Co.

384—Electric Plants

Catalog KEP56-1, 24 pages, shows the line of Kohler electric plants used as an independent source of electricity for sole supply and for automatic standby when central station power fails. Sizes range from 500 w to 50 kw, gasoline and diesel. Battery charging units in 6, 12, 36, and 140 v capacity are described.
Kohler Company.

385—Rotary Fuel Oil Burners

The new Todd Series B rotary fuel oil burners are summarized in four-page bulletin TD56-82X. It includes a burner size selector chart and lists 11 advanced design features of seven basic sizes rated from 400,000 to 22,500,000 Btu per hr, with oil capacity from 3 gal per hr to 150 gal per hr.
Todd Shipyards Corp., Products Div.

386—High-Speed Gearing

Eight-page bulletin S130 describes Terry high-speed gearing for speed-increasing or speed-reducing service. Designs for gears, gear cases, bearings, and the lubrication system are fully illustrated and explained in the text. Approximate over-all dimensions are given for the smaller units.
The Terry Steam Turbine Company.

387—Steam Generators

Bulletin GB-1 gives testimonial proof of the value-packed Amesteam generator, packaged firetube boiler. Sizes available: 10 through 600 horsepower; 15 through 250 pounds design pressure. Lists well-known users with photographs of actual installations. Illustrated literature available upon request.
Ames Iron Works.

388—Stationary Gas Engines

Bulletin SA-610 gives specifications and performance data on K-67 and K-75 6-cylinder stationary gas engines with maximum horsepower ratings of 265 and 302 respectively. Units are for standby or continuous duty power for sewage treatment plants, municipal water works, and other industrial applications.
Climax Engine Manufacturing Co.

389—Steam Generators

Specification sheet describes 750 hp standard design steam generator for light and heavy oil and/or gas. A minimum of 80 percent efficiency is guaranteed in two passes. Equipped with any of five burner arrangements. Optional equipment, elevation included.
Cyclotherm Division,
National-U.S. Radiator Corporation.

390—Packaged Boiler and Burner

Design, construction, operation, and advantages of Kewanee-Petro forced-draft packages are covered in a full-color, illustrated literature piece. Units in the 52 to 651 hp series are covered, both low pressure and high pressure, firing all types of gas and all grades of oil, or both in combination.
Kewanee Boiler Div., American-Standard.

391—Forced Draft Burners

Describes and illustrates several typical Iron Fireman industrial forced draft burner applications. Package burners, complete with forced draft fan and control panels, fire gas, all grades of fuel oil, or dual fuel. Applicable to all types of high or low pressure boilers, particularly Scotch Marine.
Iron Fireman Manufacturing Company.

392—High Temperature Water Heating

Basic advantages of the Type LFW forced recirculation generators for high temperature water are given in ten-page bulletin 700. Chart compares capital investment, operating costs, and maintenance and repairs for high temperature water and high pressure steam for district heating from central plant.
The International Boiler Works Co.

393—Matched Boiler-Burner

Illustrated, full-color literature covers the 52 to 651 hp series of Kewanee-Iron Fireman forced-draft packages for all types of gas and all grades of oil, or combination firing of both. Advantages of design, construction and operation are given, plus cutaway model view, ratings, and overall dimensions.
Kewanee Boiler Div., American-Standard.

394—Forced Draft Burner

Fundamental difference between an ordinary gun type burner and the Johnson Bankheat forced draft burner is explained in bulletin 10M-2-57. Installation drawings show the burners in operation in warm air, hot water, and steam systems. Sizes and capacities are listed for units burning oil or gas.
S. T. Johnson Company.

395—Hydraulic Turbines

Details on the Leffel turbines that drive both power generation and pumping units at the United States Bureau of Reclamation Chandler Power and Pumping Plant in the state of Washington are given in 12-page bulletin 1098-E. Literature on other Leffel turbine installations will be enclosed.
The James Leffel & Co.

396—Industrial Oil Burner

Factory engineered and built integral air register for control of combustion air is feature of Petro WR burner. Register controls entire air supply for maximum combustion efficiency. Models available for firing all fuel oils, including number 6, and for dual fuel oil-gas firing. For Scotch or firebox boilers.
Petro.

To order personal copies of these bulletins, please

397—Constant Weight Feeders

Where accuracy in feeding, proportioning, and blending of raw materials is required in capacities up to 75 tons per hour, the Model WL Feedoweight is applicable. Fully illustrated bulletin 158 lists specifications, general arrangements, and operating ranges. Accessories for the Model WL Feedoweight included.
Merrick Scale Manufacturing Company.

398—Process Machinery

Hardinge Company's bulletin 100-B is an eight-page brochure giving a brief description of each of the major items of Hardinge process machinery for the mining, chemical, stone, and ceramics industries, as well as water, sewage, industrial waste-treating, and many other related applications.
Hardinge Company, Incorporated.

399—Oil Conditioners

Catalog 859 describes new oil conditioners that dehydrate, filter, and de-aerate mineral, animal, vegetable, fish, or synthetic oils. Used to recondition lube, hydraulic, and insulating oils; and for processing oil end-products. Available in three sizes. For continuous or batch operation. Fully automatic.
Bowser, Inc.

400—Conical Vacuum Dryer

Bulletin 238 is an informative leaflet describing the Dravo Dyna-Cone dryer. Advantages of double-cone drying over other methods are discussed, and several specific features of the Dyna-Cone such as insulated jacketing, control and safety devices, and discharge door are illustrated. Specifications included.
Dravo Corporation.

401—"Platecoil" Advantages

Tranter's Platecoil bulletin lists and graphically illustrates the advantages, applications, and construction of the Platecoil units. More than a dozen varied applications are pictured and discussed. Specifications for the four Platecoil styles are listed, including their surface area, size, and weight, plus a conversion table.
Tranter Manufacturing Company, Inc.

402—"Sub-X" System

Newly offered is Thermal Research and Engineering's new four-page illustrated brochure about the Sub-X system for submerged combustion. The brochure shows typical installations, describes operating characteristics, construction details, fuels, and gives a schematic installation drawing.
Thermal Research & Engineering Corp.

403—Liquid Filters

Bulletin 7C, 16 pages, illustrates and describes the full line of crenulated laminated disc liquid filters for removing small micron-size foreign solids from most liquids one pass through at a rate of 1 gpm at 1 psi pressure drop to 1260 gpm at 3 psi pressure drop, of 35 ssu viscosity liquid.
William W. Nugent and Company, Inc.

404—High Frequency Induction Heaters

Bulletin 12B6430B describes applications and capabilities of the Allis-Chalmers induction heater for brazing, hardening, forging, annealing, melting, soldering. The Allis-Chalmers line includes the motor generator unit as well as radio frequency heaters. The bulletin also describes the necessary work fixtures.
Allis-Chalmers, Industrial Equipment Div.

405—Pyrex Brand Glass Pipe

Bulletin PE-3 is a 46-page, illustrated manual for the design, engineering, and installation of glass pipe and fittings. Properties and design characteristics of glass are given, along with engineering data (pressure drop, working stresses) and complete installation data. Engineering drawings.
Corning Glass Works.

406—Economical Process Tanks

Bulletin 18 deals with the new Polycel tanks (polymer lined wood membranes) as well as wood tanks and equipment for chemical processing, water storage and treatment, and waste disposal. Bulletin 53 describes round and rectangular tanks for industry, frost proof pipe boxing, and gravity tanks on towers.
Wendnagel & Company, Inc.

407—"Processing Profiles"

New ten-page bulletin 243 shows examples of the many different ways Whiting equipment is being used by the processing industries. Photographs, some in full color, show actual installations of this equipment at leading companies all over the country and indicate the operational economies possible.
Whiting Corporation.

408—"Rock Busters"

Bulletin 942 describes impact type crushers used to reduce hard friable materials. Primarily designed as a secondary crusher, the Rock Busters will accept either oversize from the primary unit or initial medium feed, when the product of secondary crushers can be screened and the overs re-cycled. Includes specifications.
The Jeffrey Manufacturing Co.

the card between pages 2 and 3 or 42 and 43

409—Automatic Conveyor Scales

Bulletin 375 describes the Merrick Model E Weightometer and its uses for automatic continuous in-transit weighing of bulk materials over an existing belt conveyor. Specifications and drawing of typical conveyor arrangements shown. Other types of automatic weighing machines also are described in detail. *Merrick Scale Manufacturing Company.*

410—Blowers for Clean Air

The Spencer Turbine Company's bulletin 142-B describes and pictures the company's line of blowers for use on industrial and municipal applications (particularly sewage treatment plants) wherever delivery of clean air is required. Features and advantages of the Spencer Turbine type blowers are described. *The Spencer Turbine Company.*

411—Aftercoolers and Separators

Bulletin 712 is a 10-page technical book on aftercoolers particularly for the consultant. Cutaway drawings in three colors help explain the operation. Benefits to be obtained from dry compressed air are given along with chart showing moisture left in given volume of air at pressure. Selection charts and installations. *R. P. Adams Company, Inc.*

412—Liquid Processing

Valuable to engineers concerned with liquids processing, catalog 31-E discusses equipment for collecting and thickening settled solids, for continuous processing. Hardinge thickeners, clarifiers, rakes, Auto-Raise mechanisms, No-Raise drives, agitators, hydro-clarifiers, and separators are covered in the 16-page brochure. *Hardinge Company, Incorporated.*

413—Automatic Oil Filters

Catalog 822-823 describes oil and coolant filters of wire-wound bronze or stainless steel available in port openings of from .002 to .015; and also of perforated brass sheet with porosities of .020 to .045. Rates range from 120 to 1200 gpm. Automatic self-cleaning. Widely used in metal-working plants. Specifications. *Bowser, Inc.*

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

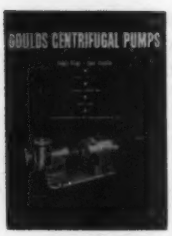
414—"Aero" Aftercooler

How aftercoolers remove moisture from compressed air and gas is explained in bulletin 130. Schematic flow diagrams show how aftercoolers can cool and dry compressed air systems in any plant. This eight-page, three-color bulletin is profusely illustrated. Full line of air engineering equipment shown on last page. *Niagara Blower Company.*

415—Materials Handling, Processing

Fully illustrated brochure 182, 36 pages, presents a report of R&S diversified services for coal and iron ore mining, steel mills, and railroads. It features materials handling and processing facilities; also ore beneficiation plants aside from specialized coal preparation plants and fabrication in well equipped shops. *Roberts & Schaefer Company.*

PUMPS AND COMPRESSORS



416—Centrifugal Pumps

Bulletin 720.4 describes full line of end suction, open impeller centrifugal pumps in sizes 1¼" to 8" with capacities up to 3000 gpm; heads up to 180 ft. Handles solids up to 2¾" in diameter. Wide range of interchangeability – minimum inventory of spare parts. Certain sizes available in stainless steel. *Goulds Pumps, Inc.*

418—Proportioning Pumps

Bulletin 302 features the new integral McCannameter and describes design details. This proportioning pump affords space savings of up to 2/3 over previous designs. Available with either diaphragm or bellows construction, with maximum capacities from 6 cc per minute to 6 gph. Maximum discharge pressure is 2500 psi. *Hills-McCanna Co.*

417—"Unipumps"

Bulletin 300, six pages, describes general service Unipumps. Versatility in mounting is pictured and discussed. Folder includes giant pump selection table from 10 to 1700 gpm, heads from 15 to 260 feet for fast reference. Cutaway illustrations show construction. Pump and motor dimensions given. *The Weinman Pump Manufacturing Co.*

419—Industrial Pumps

Easy to use table for determing horsepower, capacity, and head for close-coupled vertical pumps makes bulletin 1100 of real value. It also contains sectional views, material specifications, schematic application drawings, and photos of installations. Verti-Line pump features are clearly illustrated and described. *Layne & Bowler Pump Co.*

To order personal copies of these bulletins, please

420—Rotary Pumps

Catalog 59-S includes illustrations and specifications on general purpose and heavy-duty Viking rotary pumps. Also includes data on many special rotary pump units. A complete list of district offices and distributors reveals where additional information can be obtained promptly.
Viking Pump Company.

421—Rotary Positive Blowers

Bulletin S59F covers a complete line of rotary positive displacement blowers, up to and including the 8-inch gear diameter. Capacities available from 10 to 1100 cfm of air or gas at pressures or vacuums up to 10 psig. Units feature antifriction bearings, wide-face herringbone timing gears, and exclusive timing hub.
Sutorbilt Corporation.

422—Boiler Feed Systems

Catalog 55-C contains new specification and application data on standard and special design boiler feed systems from Schaub Engineering Company. Pumps furnished with Dura-Hard Electrolized impellers for "double" service lift. High pressure boiler feed systems include rugged power plant pump line.
Fred H. Schaub Engineering Company.

423—Proportioning Pumps

Catalog No. 604 describes the full line of precision proportioning pumps with capacities from cc's per hour to 730 gph per feed. Pressures up to 30,000 psi. Wide selection of materials of construction gives versatility in application. All pumps that are described in this catalog can be adapted for automatic control.
Hills-McCanna Company.

424—General Purpose Pumps

Pump problem formulas, pertinent pump data, friction loss tables, and pump characteristic charts are included in Peerless bulletin B-2314 on the Fluidyne line of end-suction facemount pumps. Available in sizes from ¼ to 7½ hp, these efficient pumps are compact, rugged.
Peerless Pump Div.,
Food Machinery & Chemical Corp.

425—Screw Pumps

Bulletins S4 and SE5 describe line of screw pumps for heavy duty pumping of lubricating and nonlubricating fluids and semi-fluids, from 32 to 1,000,000 ssu; capacities 1 to 1000 gpm; discharge 1000 psi for viscous liquids, 500 psi for water. Internal or external bearing types, vertical or horizontal available.
Sier-Bath Gear & Pump Co., Inc.

426—Compressors and Vacuum Pumps

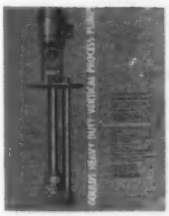
Bulletin C-6 describes Fuller rotary compressors and vacuum pumps with cutaway drawings, and illustrates uses by pictures of typical in-plant installations. For compressing air and gases, these efficient units have capacities to 3300 cfm; pressures to 125 psig; vacuums to 22.95 in. (with reference to 30 in. barometer).
Fuller Company.

427—Rotary Gear Pumps

Catalog 958B, twelve pages, contains sizes, capacities, and features of standardly fitted Roper rotary pumps, a section on new T-series pump units, and data on custom rotary pumps. Wide range of pressures and capacities. Pumps in Roper line are suited to manufacturing, petroleum, chemical, and process industries.
Roper Hydraulics, Inc.

428—Industrial Pumps

Catalog describes uses and construction of new FloWay line of industrial pumps manufactured by Fiese & Firstenberger. Capacity range is from 15 to 4000 gpm. FloWay vertical turbine pumps are designed for every industrial and municipal pumping need and for every pumping condition.
Fiese & Firstenberger Mfg., Inc.



429—Centrifugal Process Pumps

Bulletin 727.1 gives detailed description of new line of vertical heavy-duty process pumps for both wet pit and dry pit installations. Capacities to 720 gpm; heads to 190 ft. For pit depths to 20 ft. Regularly supplied in 316 stainless steel combinations. Other materials to suit users' requirements.
Goulds Pumps, Inc.

430—Centrifugal Pumps

Contained in folder 08B8585 are data sheets, bulletins, and a useful pump application flow sheet covering all the centrifugal pumps Allis-Chalmers manufactures for the pulp and paper industry. Includes water pumps, process pumps including variable capacity units, rubber-lined pumps, and fire pumps.
Allis-Chalmers, General Products Div.

431—Multi-Stage Centrifugal Pumps

To provide maximum economy on continuous high pressure, high temperature service, American-Marsh developed the four-stage type OSMH centrifugal pump described in bulletin 382. For boiler feed, mine drainage, chemical and refinery processing, this type is offered with numerous options to suit conditions.
American-Marsh Pumps, Inc.

432—"Unibuilt" Centrifugal Pumps

A complete line of flexible coupled centrifugal pumps are described and illustrated in the Bell & Gossett Company bulletin IH-538. Vertical split-case construction simplifies service. Capacities range from 10 to 1500 gpm with heads from 10 to 420 ft. Included are selection tables and dimensions.
Bell & Gossett Company.

433—Centrifugal Compressors

Centrifugal compressors series RS bulletin provides descriptions and specifications of multi-stage centrifugal compressors of capacities from 1000 to 100,000 cfm on air and gas service for refinery, chemical plants, industrial air users, wind tunnels, steel mills, and many other related industries.
The Cooper-Bessemer Corporation.

t the card between pages 2 and 3 or 42 and 43

434—Boiler Feed Pumps

New heavy duty turbine type boiler feed pumps (to 150 gpm), longer life with least maintenance, are described in bulletin 65, 8 pages. Pumps have specially hardened impellers; oversize, heavy duty bearings, shafting; and leak-proof, wet-or-dry shaft seals. Specifications and details are given in handy bulletin.
Fred H. Schaub Engineering Company.

435—High Pressure Compressors

Eight-page, two color bulletin A-93 includes complete specifications, charts, installation photographs, cross-section drawings on four basic models of heavy-duty, high pressure stationary compressors ranging in capacity from 368 to 2000 cfm. Machines are designed for soot blowing, chemical processing.
Joy Manufacturing Company.

436—Centrifugal Pumps

Bulletin 1300, 4 pages, describes a two stage, split case pump. Construction features and modern design are discussed. This versatile pump gives peak performance at lowest cost. Principal dimensions are given together with engineering specifications and complete selection table. Tab cut for your file.
Weinman Pump Manufacturing Company.

437—Rotary Pump Catalog

Catalog K is a 36-page engineering manual on rotary pumps. It includes rotary pump fundamentals, the ten easy steps in selecting correct Viking rotary pumps, and useful engineering information applying to the application of rotary pumps. Fully illustrated in color. Includes application data sheet.
Viking Pump Company.

438—Rotary Screw Pumps

New stacked construction of IMO pumps (bulletin 3001) simplifies servicing, converts basic low pressure unit from 400 to 800, 1200, or 1600 psi pressure ranges. Capacities range from 2 to 1000 gpm. Cutaway views of quiet, pulsation-free mechanism, performance curves, dimension and specification sheets.
De Laval Steam Turbine Company.

439—Pipeline Booster Pumps

Catalog 1200 including selection tables describes the all-new power line submersible pump which has been especially designed for pipeline booster service for industry, municipal water systems, petroleum pipelines, and other booster applications. This design requires no pump houses nor additional property.
Layne & Bowler Pump Company.

440—Blowers, Gas and Vacuum Pumps

These units are covered completely in new bulletin S65C and cover the complete range from 10 inch thru 26 inch gear diameters. Available in volumes up to 20,000 cfm single stage, handling air or gas under pressures up to 10 psig. Gas and vacuum pumps feature deep stuffing boxes to prevent leakage to atmosphere.
Sutorbilt Corporation.

441—Building Trades Pumps

Bulletin B-2100 illustrates and describes the Peerless AquaLine horizontal centrifugal pump line. Immediately available, these compact, easily installed pumps are applicable to many jobs calling for hot and cold water handling circulation and boosting.
Peerless Pump Div.,
Food Machinery & Chemical Corp.

SOUND AND SIGNAL SYSTEMS

442—"Clockmaster" System

Bulletin 76-4029 gathers all information printed to date on Honeywell's new system of master clocks and signal programmers. Covers construction features of both minute impulse and synchronous-wired systems; advantages of supervised installation and maintenance; sample specifications; data on components.
Minneapolis-Honeywell Regulator Co.

443—Industrial Sound Systems

Four-page bulletin 12k/Du illustrates and describes sound, alarm, and evacuation systems in use in some of the largest companies in the country. It outlines operation and functions of various types of systems designed to meet specific requirements, and emphasizes use of standard panels for custom systems.
DuKane Corporation.

444—"Dial-X" Telephone System

Folder S-100R-2 shows how to banish seven common telephone annoyances with a Dial-X private telephone communication system. Switchboard equipment and four styles of telephones are illustrated and described for ten to seventy-four line systems. Dial-X system is unmatched for flexibility.
Stromberg-Carlson, Special Products Div.

445—Economy School System

Eight-page catalog illustrates a flexible, economical school system, combining sound, intercom, and time tone signals. This system can be easily expanded to provide console or rack panel equipment, interior fire, and emergency alarms without sacrificing original wiring, conduit, or classroom stations.
Executone Inc.

To order personal copies of these bulletins, please

446—Microphones

RCA microphone "Select-a-Guide" is a fold-out brochure which displays at a glance fifteen different microphone types. Selection of the correct microphone for each application is greatly simplified. Photographs of microphones with range, impedance, and special features are included. Form 3R3287.
Radio Corporation of America.

447—Hospital Communication

Twelve-page color booklet illustrates and describes a large variety of individual hospital communication and sound systems, including audio-visual nurse call, doctors' paging, bedside radio-sound, and administrative intercom. Equipment, operating features, local planning, and service facilities available are discussed.
Executone Inc.

448—School Sound Systems

Four-page brochure 7316-E-58 illustrates and describes a new and complete line of school sound distribution systems. It covers equipment suitable for the smallest to the largest school units. Building block flexibility of console styles, panels, and functions explained. Specification sheets furnished on request.
DuKane Corporation.

449—Communication Systems

Catalog S-104R illustrates and describes 17 models from single channel to three channel systems. Both table top turrets and consoles with capacities from 22 to 180 rooms. Provisions included for telephone intercom, loudspeaker intercom, high fidelity FM-AM radio tuner, 3-speed transcription player.
Stromberg-Carlson, Special Products Div.

450—Fire-Alarm Systems

Bulletin FA-532 describes a complete line of fire-alarm systems for schools, hospitals, commercial, and industrial buildings. Specifications and representative wiring diagrams are included along with discussion of existing code requirements for supervised and nonsupervised protection systems.
Edwards Company, Inc.

451—"Right Loud Speaker"

RCA Audio News is a 6-page publication featuring an authoritative article, "The Importance of Selecting the Right Loud Speaker" by A. K. Ward, RCA sound engineer. The article discusses high-fidelity response, factors in loudspeaker testing, placement of speakers, and sound systems for any situation.
Radio Corporation of America.

452—New Clock Catalog

Covers clock and program systems — two types include synchronous motor-powered secondary clocks, the other combining secondary clocks, minute-impulse type. Both have simplified programming, automatic resetting of secondary clocks. Bell control boards, various type signals, and clocks included.
The Standard Electric Time Company.

453—Hospital Signal Systems

Bulletin GE-574 deals with a complete line of electrical signaling equipment for hospital use. Complete specifications are given for nurses' call systems (audio and visual), annunciators, alarm systems, registers, night lights, and accessory equipment. Sample wiring diagrams are included in the 12-page booklet.
Edwards Company, Inc.

STRUCTURAL MATERIALS AND EQUIPMENT

454—Roof-Ceiling Construction

Installation data and detail drawings are given in 16-page catalog LSD-58 for use of long span M-decks. They have been especially designed to provide a better balanced, more efficient structural unit for roof and combined roof-ceiling construction. Includes acoustical treatment and lighting.
The R. C. Mahon Co.

455—Concete Tensioning Materials

Catalog PC-936 shows sizes, weights, strengths, and typical load-elongation curve of uncoated stress-relieved strand for pretensioned bonded prestressed concrete. Properties of galvanized strand and uncoated stress-relieved wire for post-tensioned design are listed. End fittings bearing plates are illustrated.
John A. Roebling's Sons Corporation.

456—Floor Hardeners

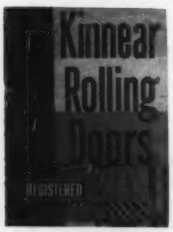
A new 4-page catalog describing in detail eight products for patching, topping, and resurfacing concrete or wooden floors. A detailed description of each is included. Also included is a page on "How to Resurface Your Floors with Nu-Way Resurfacer."
A. C. Horn Companies,
Division of Sun Chemical Corp.

457—Poured Gypsum Roof Decks

Technical bulletin 589 gives description of materials and methods, plus specifications used in the construction of poured gypsum roof decks. Contains tables for selecting steel framing members. Describes wide variety of formboards for conditions requiring insulation and acoustical treatments. Twelve pages.
National Gypsum Company.

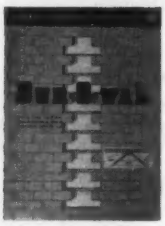
458—Catalog of Buildings

All-new general line catalog 1671 for Butler buildings includes complete information on both all-metal and system buildings for commercial, industrial, and community use. Illustrates and describes rigid frame construction for both standard and low-pitch roofs, describes cover panels and construction features.
Butler Manufacturing Company.



459—Rolling Doors

Bulletin 96, 24-pages, is a complete catalog of the many types of doors made by Kinnear. It gives information on the types of operation, both manual and electrical; elevation drawings; mounting methods for various applications and locations; specifications; and explains special construction features of these doors.
The Kinnear Manufacturing Company.



460—Masonry Wall Reinforcement

This four-page bulletin is printed in two colors and describes Dur-O-wal masonry wall reinforcement. Included are features, advantages, physical properties, and general specifications. Information on cavity wall construction, rod deformation, bonding, and report of tests are also contained in this bulletin.
Dur-O-wal.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

461—Floor Grating Applications

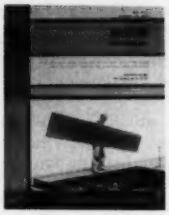
This new four-page folder features unusual uses for floor grating, including its use as sun shades for modern schools, and as low maintenance pressure-locked fencing that never needs painting. It shows dimensional diagrams of standard designs and gives safe load table for aluminum grating.
Borden Metal Products Company.

462—High Density Concrete

Twelve-page "Prepakt Reporter" includes an official Atomic Energy Commission document recommending materials and methods for placing high density concrete for biological shields. Article is based on investigations conducted at Massachusetts Institute of Technology. Article is well illustrated.
Intrusion-Prepakt, Incorporated.

463—Concrete Joists and Slabs

New catalog AT-58 gives installation data and detail drawings for use of acoustical and troffer forms for concrete joist and slab construction with acoustical ceilings and recessed lighting. Saves time, materials, and labor costs. Produces an attractive and very practical acoustical ceiling.
The R. C. Mahon Co.



464—"Milcor Ribform"

Catalog 245 describes Milcor Ribform, a permanent steel form for concrete floor and roof slabs. Fabricated from high-tensile steel in lengths to meet specifications. Erection is quick and easy — requires no special tools or skills. Available in standard and heavy duty weights; black (uncoated) and galvanized steel finishes.
Inland Steel Products Company.

465—Curtain Wall Sealant

This new 8-page catalog on Hornflex Sealant describes in detail Horn's new polysulfide rubber compound for curtain wall construction and expansion joints. Physical and chemical properties together with a chart for calculating quantities are included.
A. C. Horn Companies,
Division of Sun Chemical Corp.

466—Construction Services

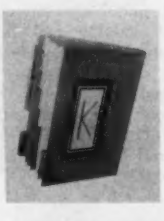
General applications of I-P service — never before offered, this 24-page illustrated booklet provides a quick guide as to applications for Intrusion-Prepakt's unique construction services. Architects and consulting engineers will find this a useful reference when confronted with unusual construction problems.
Intrusion-Prepakt, Incorporated.

467—Translucent Panels

Corrulux brochure gives complete coverage of all characteristics in a translucent structural panel. Also explains in detail exactly what to look for when purchasing or specifying these panels. This four-page colored brochure is completely illustrated.
Corrulux Division,
L-O-F Glass Fibers Company.

468—Compounds for Construction

This eight-page general catalog deals with Sika's compounds for concrete construction: concrete admixtures, exposed concrete aggregate surfaces, flexible joint sealers, quick-setting compounds, coatings, and impregnations. Complete descriptions, specifications, and typical applications are included.
Sika Chemical Corporation.



469—Masonry Wall Reinforcement File

Complete technical file on masonry wall reinforcement. Included is research data product features, cavity wall reinforcing, glass block reinforcing, illustrations, comparison guide, and specifications. Each subject division is tabbed for easy reference and the complete file is in a tabbed file folder for your cabinet file.
Dur-O-wal.

470—Roof-Ceiling Steel Panels

A new steel panel that serves as both roof deck and exposed acoustical ceiling — yet saves almost half the cost of separate roof and ceiling constructions — is described in catalog 241. Included are load tables, noise reduction chart, installation instructions, and suggested engineering specifications.
Inland Steel Products Company.

To order personal copies of these bulletins, please

471—Admixture for Concrete

This informative 48-page brochure describes Sonotard, the time-tested and field-tested concrete admixture, plasticizer, and densifier. Presents complete technical data, descriptive literature, laboratory reports, sample test results and "official" approvals.
L. Sonneborn Sons, Inc.
Building Products Division.

472—Curtain Wall Systems

Catalog C-58 outlines Bayley aluminum or steel curtain wall systems and insulated panels with Bayley aluminum projected windows. Advantages of Bayley curtain walls include choice of distinctive wall treatment without cost of special design, a wall engineered to accommodate a building's movement.
The William Bayley Company.

473—Bridging Report

Steel Joist Institute bulletin IBR is a report on the effect of various types of bridging on the behavior of open web steel joists. Includes detailed results of three series of load tests on a group of seven open web steel joists, conducted at Washington University, St. Louis, ununder Steel Joist Institute sponsorship.
Steel Joist Institute.

474—Airport Pavements, Structures

Details of concreting operations on 9 airfield projects are given in this new 20-page Reporter. Stories cite the role played by Pozzolith in providing concrete of improved workability for placement of runways under varied temperatures, humidity, and drying conditions while meeting strength requirements.
The Master Builders Company.

475—Sling Handbook

Tuffy Sling Handbook, SL-NO-3, a 40-page reference manual, covers more than 80 subjects on Tuffy machine braided slings and sling fittings. Contains reference charts on sling types, dimensions, and rated loads in addition to charts on fittings for quick reference on sizes, rated loads, weights, and features.
Union Wire Rope Corporation.

476—Tower Cranes

Six page, 3 color bulletin describes Peine Slewing tower cranes. Profusely illustrated, this bulletin shows Peine tower cranes in various situations. One picture shows operation on a 320 foot high building. Safety and stability are stressed, as well as maneuverability and ease of installation.
Beatty Safway Scaffold, Incorporated.

534—Integral Door and Frame Units

A new, completely redesigned and sectionalized 24-page catalog No. 2458 has new indexing and ready-reference pages. Four door models are featured. Mortise and cylindrical locks plus other hardware and accessories are illustrated. The solid mineral core, a unique construction feature, is also described.
Dusing and Hunt, Inc.

477—Aluminum Grating

Eight-page bulletin on aluminum grating. Various types of gratings are illustrated. Included are detailed drawings and tables of safe loads for Roll-Lock multipurpose aluminum grating, pressure-lock aluminum grating, and riveted aluminum grating. Also included are details on aluminum stair treads.
Kerrigan Iron Works, Inc.

478—Community Buildings

Booklet 1567, in full color, describes and illustrates community buildings of all types — schools, churches, public and private buildings — erected from Butler pre-engineered metal building components; styled for specific individual usage. Butler building system provides beauty, quality, economy.
Butler Manufacturing Company.

479—Rigid Frame Buildings

New 20-page booklet describes Stran-Steel Corporation's complete line of rigid frame buildings with the luxury look of Stran Satin for industrial and commercial use. Building features, construction details, and dimensions are clearly shown. For manufacturing and processing plants, warehousing, and retail operations.
Stran-Steel Corporation.

480—Wood and Steel Doors

New, 1958 bulletin 92 demonstrates how both wood and steel RoL-TOP doors, with their straight-line outward appearance, are well suited to modern building needs. Drawings show recommended types for various applications and clearances, types of operation, special features, and dimensions.
The Kinnear Manufacturing Company.

481—Ball-Socket Flexible Joints

Bulletin 229 describes methods for using ball-and-socket type flexible joints on guy wires, braces, or struts used to position stacks, vessels, piping, or tall columns subject to wind sway, vibration, or thermal movement. Flexible bracing maintains axial alignment while allowing free lateral movement.
Barco Manufacturing Company.

482—"Tri-Ten" Alloy Steel

"Tri-Ten, High-Strength Alloy" is title of 24-page catalog by United States Steel. Catalog gives properties and characteristics including weldability, workability, corrosion resistance, mechanical property requirements, chemical composition, and comparative engineering data. Also includes fabricating data.
U. S. Steel Corp.

535—Standardized Metal Door Frames

Architectural scaled details and applications for various wall conditions are presented in folded SF 958 for the engineer by Dusing and Hunt, Inc. of Le Roy, N. Y. The six page folder illustrates in one-quarter size for tracing the seven standard frame sizes and cased opening frames. Frame accessories are pictured.
Dusing and Hunt, Inc.

483—The "Levermatic"

A new and compact soils load settlement device called the Levermatic consolidation apparatus is an entirely self-contained unit easily carried by one man. The unit is designed to predict, through laboratory tests, the settlement of a foundation under a dam, building, bridge, or similar structure.
Soiltest, Incorporated.

484—Watertight Concrete

A factual summary of authoritative thought on the design and specification of watertight concrete. Discussion covers: permeability, shrinkage, bleeding, segregation, and the action of Pozzolith to minimize these defects and produce strong, durable concrete highly resistant to water penetration.
The Master Builders Company.

485—Cold Weather Concreting

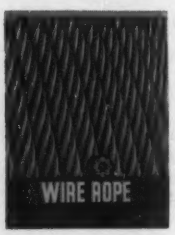
This four-page bulletin, SI-57, explains the action of Sikacrete accelerating densifier and its beneficial effect on structural properties of concrete. The rapid strength development of Sikacrete reduce the possibility of damage by freezing. Complete specifications, test data sent with folder.
Sika Chemical Corporation.

486—Multi-Purpose Sealing Compound

Technical Data Guide 52 describes fully Sonolastic sealing compound, a weathertight, lasting synthetic rubber sealing and caulking compound. Unaffected by exposure to wind, sun, cold, moisture, and salt spray, while its characteristics give it positive adhesion to all materials.
L. Sonneborn Sons, Inc.,
Building Products Division.

487—Steel Joists

Bulletin, 36 pages, by the Steel Joist Institute provides complete technical information on open web steel joists manufactured in the 16 member company plants of the Steel Joist Institute. Bulletin includes standard specifications, load and spacing tables on 25 types of open web steel joists.
Steel Joist Institute.



488—Wire Rope Splicing

Wire Rope Splicing is a 32-page handbook describing and illustrating various eye splicing methods, endless splices preformed and Lang Lay wire rope splicing, and the Chicago technique. The subjects of grommet socketing and wire rope efficiencies are also covered. Handbook includes descriptive photographs.
Union Wire Rope Corporation.

489—Precast Concrete Slabs

Bulletin X-541 gives complete information on Permacrete precast concrete crossing slabs. These edge-armored slabs provide smooth riding surfaces with greater safety and eliminate constant maintenance of railroad grade crossings. Widely used on crossings throughout industrial plant properties.
Permacrete Products Corporation.

490—Grating and Treads

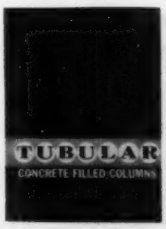
Gary grating and treads tailor-made to suit your individual requirements are illustrated in a 24-page brochure. Two-page spread includes tables of safe loads, specifications, and other engineering data. Photographs in this booklet also show the many typical applications of this quality decking.
Rockwell-Standard Corp., Grating Div.

491—Grating Catalog

This 16-page catalog shows the three basic types of grating construction; gives more than 30 dimensional drawings of subtypes; eight safe load tables covering steel and aluminum grating, roadway grating, and sidewalk slabs; tables on panel widths, tread widths, and floor armor. Planning layouts are given.
Borden Metal Products Company.

492—All-Steel Buildings

New 'erect-it-yourself' all-steel buildings, called the Stran-Master, are described in illustrated catalog. Ideal for low-cost warehousing, light manufacturing, retail stores, general utility, the Stran-Master can be erected by an unskilled crew in 180-200 man-hours. Adjustable telescoping columns and girts.
Stran-Steel Corporation.



493—Concrete-Filled Columns

Catalog lists different types of columns together with properties and safe load tables for concrete-filled standard weight and extra strong pipe columns. Included are properties and safe load tables for square and rectangular columns. Types of columns and connections are shown with standards for caps and bases.
Tubular Products, Inc.

494—Steel Design Manual

The first complete text on how to design high-strength low-alloy steels. Concise, well-written. Covers unit stresses, beams and columns, plates, riveting, and designing to thwart corrosion. Probably the only basic text extending design fundamentals to the higher strength levels of high-strength steels.
U. S. Steel Corp.

495—Translucent Structural Panels

Bulletin SW-2 gives complete selection data, physical and chemical properties, general recommendation and installation details as well as accessory data for Corrulux translucent structural panels. Installation details and typical detail drawings also are included.
Corrulux Division,
L-O-F Glass Fibers Company.

496—Curtain Wall Systems

Catalog S-58 describes the complete Bayley line of steel windows and doors, including original Bayley features such as the interlocked muntin joint, "variable-width-adjustable" mullions. The booklet details such items as heavy intermediate projected windows, horizontally pivoted windows, and classroom windows.
The William Bayley Company.

To order personal copies of these bulletins, please

497—"Galbestos" Technical Data

This 32-page booklet contains a wealth of technical information on Robertson Galbestos — information that will be helpful in handling and installing this high quality protected metal . . . includes standard corrugations, purlin and girt spacing, load tables, weights and gages, erection instructions.
H. H. Robertson Company.

498—Mobile Laboratories

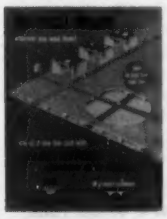
New sixteen page catalog, fully illustrated, completely describes all truck and trailer models of mobile laboratories. These make possible job-site engineering testing of foundations for buildings, roads, dams, runways, and for quality control of construction materials as concrete and asphalt.
Soiltest, Inc.

499—Steel Stair Treads

Tread-Grip steel stair treads combine strength of construction with safe, nonslip footing, according to four-page booklet HTP2130. This brochure describes such features as A. W. Algrip nosing, electroforged and welded construction, and twisted cross bars.
Speedline Stainless Steel Fittings, Horace T. Potts Company.

500—Welded Steel Buildings

Bulletin 1302.148 presents, in simplified chart form, information on weld size for any structural need. Based on A.I.S.C. and A.W.S. specifications and codes, the charts eliminate many calculations. The bulletin also describes prequalified joints recognized by A.W.S. as suitable for use without a qualification test.
The Lincoln Electric Company.



501—Electrified Concrete Floors

Sixteen-page booklet, "Electrical Outlets Wherever You Need Them," gives complete details on RLC duct floors, a new development which provides 100 percent electrical flexibility for buildings and a remarkable low cost. The illustrated booklet is published by the Concrete Steel Reinforcing Institute.
Concrete Steel Reinforcing Institute.

502—Corrugated Roofing, Siding

New manual 2785 depicts and explains all accepted methods of applying corrugated Asbestone "400." Gives instructions on storage, handling, accessories, sealing compounds, plus detail drawings. Gold Bond corrugated Asbestone "400" resists rot, fire, salt air, corrosion. Also has many interior uses. A.I.A. File No. 12-F.
National Gypsum Company.

503—Concrete Wall Panels

Insulated precast concrete wall panels and rigid steel framing combined in custom "Panel Bilt" buildings are shown in four-page pamphlet 7285. Panel and structural details are shown for each industrial and commercial purpose described. How this type of construction saves time and money is explained.
The Marietta Concrete Corp.

504—Masonry Elastic Seals

Informative four-page bulletin describes three types of masonry elastic seals: weathertite compressible seals for control joints in block wall, the everelastic masonry gasket, and rubber waterstops. Bulletin is illustrated with cross-section line drawings showing application of the three seals.
Williams Equip. and Supply Co., Inc.

505—Industrial Floors

Bulletin 3-3 describes Atlas corrosion-resistant industrial floor "individually engineered" for each specific problem. Construction methods and material quantity estimating table are also included. Two types of flooring are described: Alkor furfuryl alcohol resin and Vitrobond plasticized hot pour sulfur base.
Atlas Mineral Products Company.

506—Large Doors

Sixteen-page catalog describes the types of doors manufactured and installed for industrial building and aircraft hangar installations. Included are canopy type, motorized slide, turn-over, and vertical lift doors. Doors such as for crane entrances and the "Byrna-perture" for hangars are also described and illustrated.
Byrne Doors, Inc.

507—Steel Rope

This publication contains information required for selection and preparation of specifications for wire, strand, and rope used on guyed structures and suspended systems of all kinds, except major suspension bridges. Both standard and special fittings for use with bridge strand and bridge rope are illustrated.
John A. Roebling's Sons Corporation.

508—Flooring, Grating, Treads

This 20-page bulletin describes the wide line of Hendrick's Mitco open steel flooring, aluminum grating, Shur-Site treads, Armogrids, and driveway grating. Fully illustrated with photos of actual installations in a wide range and variety of industries. Complete with sizes, specifications, capacities, and application.
Hendrick Manufacturing Co.

509—Anti-Skid Grating

Safety Grip-Strut, an anti-skid grating in which the vertical members are joined by integral saddle to create lateral struts of great strength, is described in 12-page booklet. General applications, installation and assembly, and fastening devices are discussed. Load tables are given for both steel and aluminum grating.
The Globe Company.

510—Self-Contained Steel Derricks

Advantages gained by using Whirlettes — full revolving, self-contained steel derricks — are listed in four-page folder MP-49. The hoist is mounted on the rotating structure and only one foundation is necessary. No guy lines or stiff legs are required. Booklet gives specifications, and illustrates typical uses.
Clyde Iron Works, Inc.

511—Scaffold Shoring

Bulletin BP-10 describing Beatty scaffold shoring is composed of 6 pages and printed in 2 colors. Contains diagrams, shoring data tables, and description of frames. Wing-nuts and studs are replaced with labor-saving patented Snaplocks. Various applications are pictured. Also described is Pecco shoring.
Beatty Safway Scaffold, Incorporated.

512—Grating, Flooring, Treads

General grating catalog F-400 contains illustrations, descriptions, and complete engineering data on grating flooring, treads, and floor armoring (riveted, press-locked, and welded types). Irving grating is safe, durable, fireproof, ventilating, clean, and economical for industrial and power plant flooring and stairways.
Irving Subway Grating Company, Inc.

WATER TREATMENT AND WASTE DISPOSAL

513—Water Supply

Twenty-four page booklet entitled "Supplying Water" describes the unique Ranney methods of supplying more clear water to industry and municipalities. Valuable information is included on horizontal collectors, infiltration galleries. Vertube wells, Ranney intakes, and new dewatering process.
Ranney Method Water Supplies, Inc.

518—Handbook on Demineralizing

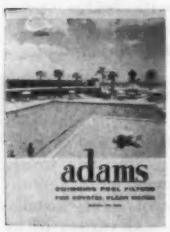
Publication 5800, "Cochrane Handbook on Demineralizing," goes into a detailed description of the demineralizing process and various applications in efficient removal of silica. Flow diagrams and photographs of several types of installations are included to show how this equipment can serve your client.
Cochrane Corporation.

514—Ion-Exchange Control Systems

Bulletin E describes the automation of ion-exchange and water treatment equipment. A suggested specification is included, together with typical illustrations and descriptions of important design features. Automatic control systems described are adaptable to any automatic valve sequencing operation.
Illinois Water Treatment Company.

519—Rubber Pipe Joint Manual

"Tylox Rubber Gaskets", 20-page brochure in color, fully describes Hamilton Kent's compression-type rubber sewer and drain pipe couplings for tongue-and-groove pipe. Contains full information on how to apply gaskets to pipe and install pipe into the line; also engineering data and specification suggestions.
Hamilton Kent Manufacturing Company.



515—Swimming Pool Filters

New 24-page technical bulletin for architects and consulting engineers on swimming pool filters for municipal, public, and institutional pools. Contains typical installations, cross-section and operational drawings, charts, and factual comparison. This manufacturer does not offer a filter for backyard type pools.
R. P. Adams Company, Inc.

520—Zero Hardness Boiler Feedwater

Bulletin Z-1 is a 4-page pamphlet describing the treatment of boiler feedwater using Nalcite HCR cation exchanger in a hot lime zeolite system. Included are two schematic diagrams of such a system and a table showing the quality of effluent waters obtainable from raw waters of various composition.
National Aluminate Corporation.

516—Bell and Spigot Pipe Joints

"Rexon K" rubber sewer pipe gaskets are fully described in a 4-page bulletin in color. Joints are self-energizing compression-type for coupling bell and spigot concrete pipe. Includes full details on applying gaskets and installing pipe in the line. Successive steps of application and installation are illustrated.
Hamilton Kent Manufacturing Company.

521—Standard and New Wood Tank

Bulletin 18 deals with the new Polycel tanks (polymer lined wood membranes) as well as wood tanks and equipment for chemical processing, water storage and treatment, and waste disposal. Bulletin 53 describes round and rectangular tanks for industry, frost proof pipe boxing, and gravity tanks on towers.
Wendnagel & Company, Inc.

517—Manual-Type Water Softeners

Bulletin 200A deals with manual type softeners with single lever multiport valve control. Complete specifications are listed for 18 stock models, with installation diagrams, descriptions, and operation data included. Capacities are to 1.5 million grains single unit, 3 million grains twin unit; flow rates to 175 gpm.
Bruner Corporation.

522—Chemical Process Equipment

WC-120 describes the complete line of chemical process equipment available to industry for maximum product purification, more advanced processing techniques, recovery of process by-products and recovery of valuable materials. Equipment includes ion exchangers, sedimentation units, filtration units.
Graver Water Conditioning Co.

To order personal copies of these bulletins, please f

Order as many bulletins as you need, as often as you need them.

Consulting Engineer Supplement -- November 1958

Please circle the key numbers denoting the information and literature you want

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243
244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297
298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351
352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378
379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405
406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459
460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486
487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513
514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540

Your Name_____ **Title**_____

Your Company_____

Co. Address (St. & No.)_____

City_____ **Zone**____ **State**_____

Consulting Engineer Supplement -- November 1958

Please circle the key numbers denoting the information and literature you want

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81
82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108
109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162
163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216
217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243
244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297
298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324
325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351
352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378
379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405
406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432
433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459
460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486
487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513
514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540

Your Name_____ **Title**_____

Your Company_____

Co. Address (St. & No.)_____

City_____ **Zone**____ **State**_____

FIRST CLASS
PERMIT NO. 19
(39 C.F.R. 34.9)
ST. JOSEPH, MICH.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

CONSULTING ENGINEER
WAYNE NEAR PLEASANT STREET
SAINT JOSEPH, MICHIGAN

FIRST CLASS
PERMIT NO. 19
(39 C.F.R. 34.9)
ST. JOSEPH, MICH.

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

CONSULTING ENGINEER
WAYNE NEAR PLEASANT STREET
SAINT JOSEPH, MICHIGAN

523—Rotary Distributor

Bulletin 5452 describes the new Gard rotary distributor for trickling filters. The unit features low operating head, frictionless air seal, non-clogging reactors (no nozzles), master bearing in oil bath above water level, and all aluminum arms and reactors. Specifications and data are available.
General Filter Company.

524—Water Softeners

Bulletin 612A describes the Elgin Ultramatic water softener. Completely automatic pilot control panel actuates diaphragm-type hydraulic valves to regulate duration and flow rate of each operation — backwashing, brining, rinsing, and return to service. Readily adjusted for any ion exchange system.
Elgin Softener Corporation.

525—"Why and How" of Deaeration

Literature on various types of deaerators is offered in five sections, starting with the "Why and How" of deaeration (4630). The others deal with Jet Tray Deaerators (4651); Tray Type Deaerators (4652); Cold Water Deaerators (4653); and Surface Type Deaerating Hot Water Heaters (4654).
Cochrane Corporation.

526—Sewer Joint Compound

Bulletin M20-1 describes the properties of Atlas G-K sewer joint compound and gives detailed instructions for its use under any circumstance. An easy-to-follow comparative chart is also included indicating qualities of G-K needed per pipe size. A four-page, two-color, illustrated bulletin.
Atlas Mineral Products Company.

527—Deaerating Heaters

Bulletin WC-118A describes the small, simple, compact deaerating heater available and presents the advantages of using the system. Basic arrangements for the use of the heater in power cycles is shown plus complete sizing charts and all engineering information needed to include the heater in specifications.
Graver Water Conditioning Co.

528—High-Flow-Rate Clarifier

Bulletin CL-158 describes the Illco-Way continuous high-flow-rate clarifier, an upflow coagulator design that is adaptable to a wide variety of water and waste treatment applications, including lime-soda dealkalization, removal of iron, color, turbidity, organics, silica, and chemical waste treatment.
Illinois Water Treatment Company.

529—Automatic Water Softeners

Bulletin 400A describes automatic water softeners for heavy duty service. Complete specifications are listed for 17 stock models, with installation diagrams and operation information included. Stock models in capacities up to 1.5 million grains, single unit; 3 million grains, twin unit. Flow rates are up to 175 gpm.
Bruner Corporation.

To order personal copies of these bulletins, please fill out the card between pages 2 and 3 or 42 and 43.

530—Ion Exchangers

Sixty-page manual Z-5 explains ion exchange water conditioning processes, the resins and equipment used, quality of water produced, and typical costs involved. Designed as a practical handbook to aid engineers in proper selection and operation of ion exchange units in water conditioning applications.
National Aluminate Corporation.

531—Water Supply

Ranney's new twenty-page booklet entitled "Supplying Water" describes the unique Ranney methods of supplying more clear water to industry and municipalities. Valuable information is included on horizontal collectors, Vertube wells, Ranney intakes, and Ranney's new dewatering process.
Ranney Method Water Supplies, Inc.

532—"Contraflo" Clarifiers

Bulletin 5811 describes the five basic Contraflo designs used for treatment of well and surface waters, and for neutralization, recovery, and separation of waste products. Pictures, drawings, and tables show standard units up to 70 feet in diameter. Specifications and data for larger units are available.
General Filter Company.

533—Mixed-Bed De-Ionizers

Bulletin 512 describes single-column mixed-bed deionizers that deliver high quality water, free from all ionizable impurities including CO_2 and silica, at much less than distillation or evaporation cost. "Double-Check" design gives added capacity and prevents loss of ion exchange material.
Elgin Softener Corporation.

INDEX
OF MANUFACTURERS' LITERATURE